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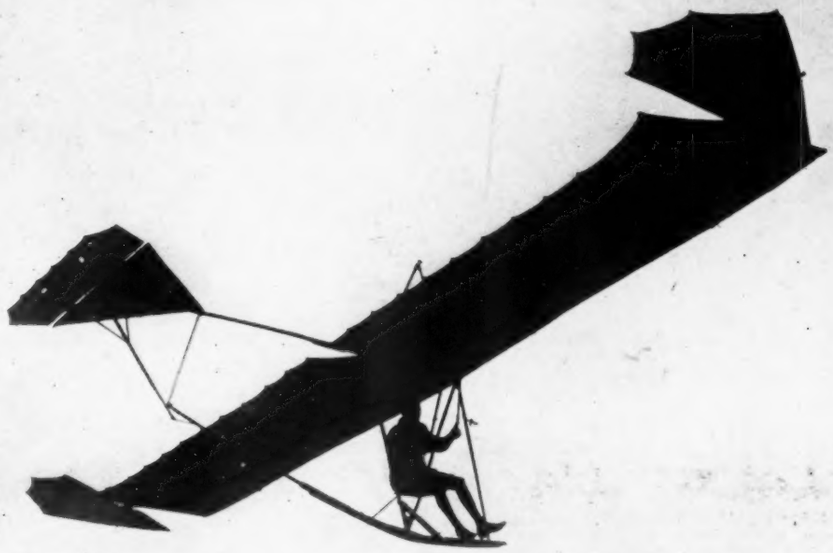
JUNE 23, 1924 Issued Weekly PRICE 10 CENTS



A new gliding record—the German pilot Schulz stays up 8 hr. 42 min.
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VOLUME XVI

NUMBER 25

SPECIAL FEATURES

AVIATION MEET AT MILLER FIELD

FROM KEYPORT TO PORTO RICO AND BACK

EQUIPMENT REQUIRED FOR HIGH ALTITUDE FLYING

PROGRESS OF THE AMERICAN ROUND THE WORLD FLIGHT

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225 FOURTH AVENUE, NEW YORK

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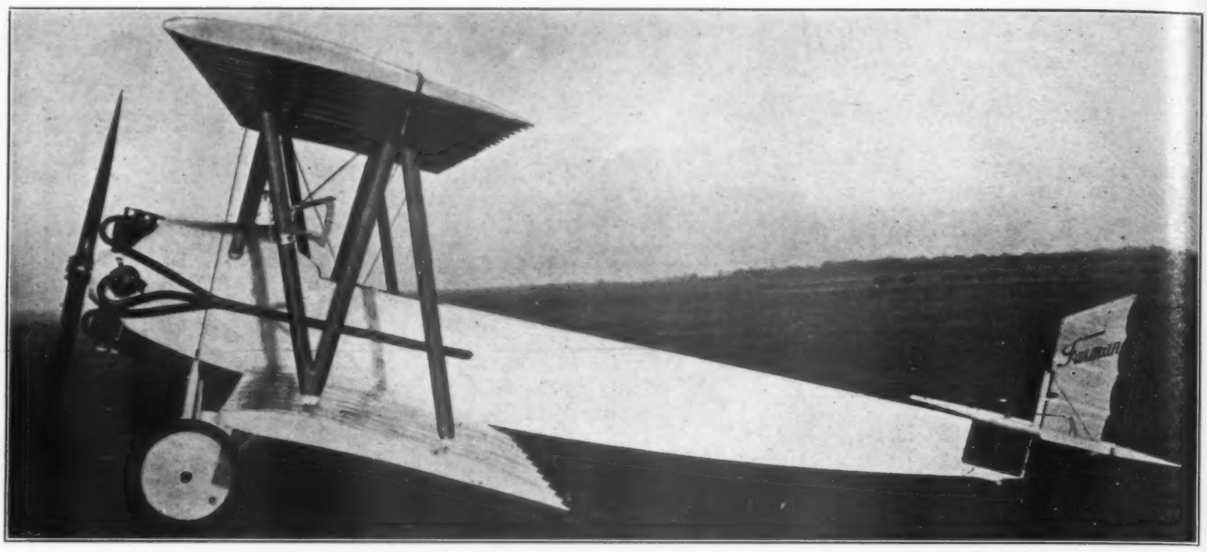

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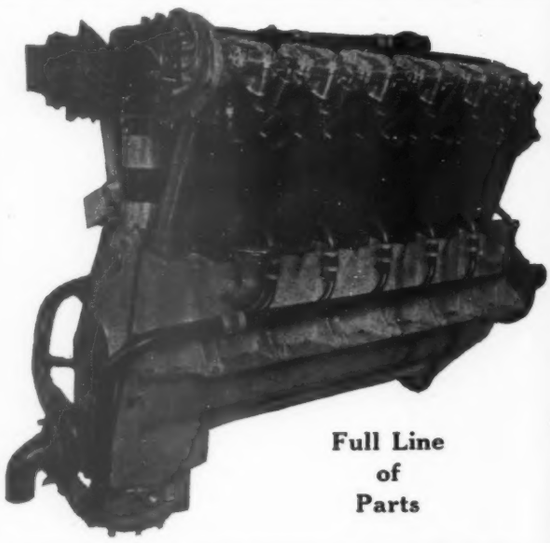

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VOL. XVI. NO. 25

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The Training of Air Pilots

AMONG the numerous problems with which the Air Services are faced, none are as serious as the procurement of suitable types of planes and the maintenance of a reserve of well trained pilots. The first named problem is constantly kept to the fore by the various manufacturers of aircraft, and so is receiving a fair share of attention; but the second named problem, it seems to us, is rather being neglected.

On account of the cost involved, it is impossible to keep more than a nucleus of fliers in the Army and Navy Air Services. While we have in theory some 5000 reserve pilots who were trained during the war, actually most of these men have not piloted a ship since the Armistice, and most of them are, or soon will be, too old to form good aviation material in a future emergency. The problem of an ample reserve of Service type fliers will then soon become an acute one. A pilot becomes obsolete almost as quickly as the ship he flies. The problem, then, is to give each year flying instruction to a sufficient number of new and young recruits *who will keep on flying* either in commercial aviation or as a sport until a war emergency arises.

This problem is being tackled at present in different and not altogether satisfactory ways. The Army gives at Brooks Field an excellent flying course to civilians enlisting for the purpose as Flying Cadets, and drawing regular Army pay. Upon completion of the course, the Cadet is discharged and given a second lieutenant's commission in the Air Service Reserve Corps. The Navy operates three stations for seaplane pilots under a similar scheme.

The trouble with this system is not that it does not turn out good pilots, for it does, but rather that it does not utilize to better advantage the available civilian flying schools. The latter turns out every year a large number of fairly well, but incompletely, trained pilots. The general experience is that after a student has soloed, the school finds it almost impossible to make him continue his course until he becomes a really competent pilot. The high cost of learning to fly, on one hand, and premature ambitions, on the other, cause many a student to leave the school with the Jennie he has purchased after only five hours training. The absence of federal certification of pilots, and a general disregard of the need of an F.A.I. Pilot's Certificate, makes the school powerless to prevent this early exodus. And if such a one half of one per cent pilot crashes, it is the school that gets the "black eye," together with the general subject of flying.

Now it would seem as if the Army and Navy Air Services could bring about a much desired relief in this situation. It is suggested that—as is the case in France, England and Italy—the Services draw up an approved list of civilian flying schools which they consider competent to give primary training and that they pay them a standard bonus for each pilot trained in accordance with an approved program. The pilots who show special aptitude and who come up to certain requirements could then be given a chance to take an advanced training course at Army or Navy air stations, upon completion of which they would be given a rating or rank in the Reserves.

Some such scheme as outlined here roughly, would have several advantages over the system now in vogue. First it would turn out competent reserve pilots who would be a constant asset to the Services, because their primary training followed certain Service requirements, and because they would generally keep up their flying in commercial aviation. Second, the military authorities would save money now spent in the Platonic hope that the civilian fliers they train will keep up flying—which is not generally the case, for the man who takes up flying as a business is as a rule in too much of a hurry to go through a Brooks Field course. Third, the system would profit the civilian schools, both by obtaining for them large numbers of students and by safe-guarding their reputation. And fourth, and not the least important of all, it would raise the safety standard of civilian flying a whole lot, provided the approved schools would agree not to train students under lower standards than those specified in the approved program.

Martyrs to Science

THE tragic death of First Lieut. James T. Neely, A.S., and Dr. C. LeRoy Meisinger, meteorologist, Weather Bureau, on June 3, 1924, while on official duty in flight over Illinois in a free balloon, removes two of the ablest men from the younger ranks of practical research workers of the world.

Both of these men were without equal in their own particular line of endeavor. Both were experts in aerial investigation: Neely in air navigation and Meisinger in aerial charting. The very happy arrangement of having the Weather Bureau's chief exponent of upper air study, and the Air Service's most expert free air pilot unite in actual study while in free flight over the central portion of the United States brought lasting good results.

Both men were under thirty years of age and both were possessed of intense enthusiasm in their own particular lines, yet working in unison with only one end in view—their practicalization of meteorology for the benefit of air pilots. Lieutenant Neely possessed that high courage characteristic of our best air pilots in the Army and Navy, coupled with splendidly trained technical ability. He was also one of the most resourceful parachute men in the Air Service. Doctor Meisinger was unusually well grounded in meteorology and had had the advantage of exceptionally fine association with the leaders in meteorological endeavor.

Neely and Meisinger will never be forgotten and the result of their joint work has enriched our knowledge of the little known region of the upper air.

gers at different towns on the island and making frequent trips to Culebra, where the Atlantic Fleet was assembled for winter maneuvers.

Barnacles and Oysters

On April 2, after the motor had had 157 hr. and the boat had been in the water since Jan. 15, we hired a derrick to lift us out for a general overhauling and motor change. We found not only barnacles on the bottom of the boat, but also a quantity of full sized oysters that had grown aft of the step. Outside of this the bottom and hull were in exce'lent condition, needing only a thorough scraping and new paint. Our mechanic and a negro helper spent four weeks doing a thorough job, scraping and repainting all fittings, interplane wires, pontoons and other work necessary to preserve the boat against deterioration.

After re-launching the boat we decided to continue passenger carrying on the island until we had given the new

The Aeromarine metal hull flying boat Morro Castle II, which C. J. Zimmerman piloted from New York to Porto Rico and back

motor at least 30 hr. to assure us that it would not let us down on the long return flight to New York. As our passengers who made the trip south had returned north by steamer, we were able to start our homeward flight light.

We had been instructed by the factory to be in Keyport not later than June 1, so on May 23, after taking on a load of 270 gal. of fuel, 30 gal. of oil and a good supply of other equipment, we left San Juan harbor at daylight headed for Antilla, Cuba, a distance of 700 mi. Lunch time found us off the Northwest coast of Haiti, where we landed in the lee of Tortuga Island and dropped anchor for a short rest and a luncheon of sandwiches and coffee from our thermos bottles. After an hour's rest we took off and landed 4 hr. later at Antilla, having covered over 700 mi. in 9 hr. without refueling. We arrived there in time to refuel our ship and get through the necessary Custom regulations to proceed at daylight the following morning.

At daylight on the 24th, we left Antilla, with custom house clearance papers for Key West, Fla., a distance of 550 mi. Just before leaving the coast of Cuba for our ocean jump to Key West, a collector strainer on the rear carburetor sheared the bolt holding it to the carburetor, causing forced landing behind the Keys, on the north coast of Cuba. Fortunately, there was enough rubber hose in the spare box to connect the carburetor directly, which made it possible to proceed to Key West where we arrived at 3:30 p. m. having covered 550 mi. in 7 hr. As our mechanic's home was in Key West and he had been away on this trip for four months, we decided to lay over there on Sunday, May 25.

A Long Hop

At daylight on the 26th, with an additional passenger, Mrs. Whalton, our mechanic's wife, we left Key West headed for Manteo, N. C., a distance of 1,000 mi., planning to stop at Titusville, Fla., and Southport, N. C., to replenish our fuel. As we were well acquainted with these fueling stations and as on the Atlantic Coast it is impossible to buy fuel in 5 gal. cans as sold in the West Indies, we decided to use only our main tanks and make more frequent stops. After 5 hr. 10 min. we landed at Titusville, 350 mi. north of Key West, where we remained an hour taking on 100 gal. of fuel to refill our tanks. Leaving Titusville at 11:15 a. m., we continued north against a 15 mi. head wind for 7 hr., landing at Southport at 6:15 p. m. It was then too dark to attempt to cover the remaining 200 mi. to Manteo before dark, so we refilled our tanks and spent the night in Southport, disappointed that we had not made our objective, but satisfied in having covered 800 mi. against head winds in 12½ hr. of flying.

On the 27th we again got an early start and made Manteo for breakfast at 8:15 a. m. As the wind was blowing strong from the southeast and we had wired the factory the night before that we would arrive in New York at 82nd Street and North River at 3:30 p. m., we delayed our departure from Manteo until 11 a. m., allowing 5½ hr. to cover the remaining 375 mi. to New York.

The Home Run

Shortly after leaving Manteo, upon taking observations on shore marks, we found that we were making a little over 110 mi./hr. although we were throttled down as low as possible and still holding our altitude. At Ocean City, we ran into heavy rain, but were able to proceed by taking a course a mile off shore. At 1:30 p. m. we were over Sandy Hook, 2 hr. ahead of schedule, so we decided to land at Keyport and change a leaking water pump before proceeding to New York. It was still raining when we left Keyport at 3:15 p. m. and again when we passed the Statute of Liberty flying through the thick smoky air that always hangs over New York.

Needless to say, we had a feeling of great contentment when we landed at 82nd Street and taxied up to the Columbia Yacht Club landing, where a group of factory officials, newspaper men and photographers met us.

During our cruise of four and one half months we had flown a little over 200 hr. at an average speed of 75 mi./hr., covering a total distance of over 15,000 mi. During this period we carried over 3,000 passengers, entirely financed ourselves and we believe we are safe in saying that the ship returned to the factory showing no signs whatever of deterioration. We experienced none of the troubles so common to the old type wooden flying boat hulls which soak up water, and this despite the fact that our metal hull received some pretty tough treatment when operating in open ports under bad conditions.

Argentine World Flight

The round the world flight planned by Maj. Pedro Zanni, the Argentine aviator will be accomplished with three different machines, the first being a Fokker C IV machine with wheel underearriage; the second a similar plane equipped with pontoons, and the third an especially designed Fokker seaplane. The planes, which are powered with 450 hp. Napier Lion engines, will be shipped to the jumping off points of each stage.

As stated in the March 31, 1924, issue of AVIATION, Major Zanni's itinerary will be essentially that of the British world flight, except for minor deviations. The Argentine airmen will probably fly across North America over the Air Mail route from San Francisco to New York—instead of across Canada, as is Maclaren's plan—and then fly up to Newfoundland and from there make a direct flight across the Atlantic Ocean to Ireland, following Alcock and Brown's route. The starting place of the expedition has not yet been made public.

The Argentine world flight crew will include, beside Major Zanni, Lieut. Nelson T. Page of the Argentine naval air service, and Felipe Beltrame, engineer.

Ruth Law and the Helicopter

Ruth Law, who gave up flying in 1921 after many exploits, arrived last week in New York. According to the *New York Times*, after studying the helicopter for some time, she has concluded that it will be the great machine of the future. After experiments at her home in Beverley Hills, Calif., she received offers of aid from wealthy Californians, but she decided to come East and work with experts here.

From Keyport to Porto Rico and Back

By C. J. ZIMMERMAN

Chief Test Pilot, Aeromarine Plane & Motor Co.

On Jan. 16 at 11 a. m. we took off from Keyport harbor, headed south, with four passengers and a crew of two in the Aeromarine metal hull flying boat Morro Castle II. Beside our load of passengers we had eleven pieces of baggage, a 50 lb. aerial mapping kodak, a box of motor spares weighing 125 lb., two extra Liberty cylinders, a special 65 lb. anchor and our regular 35 lb. folding anchor. A canvas sea anchor and a metal hatch cover to clamp down over our forward passenger compartments in the event of a forced landing in heavy seas completed our equipment. Beside this load we had in our three fuel tanks 170 gal. of gasoline which made our load, exclusive of water and oil, over 2500 lb., a heavy load for a single Liberty motor installed in a flying boat whose weight empty is about 3600 lb., making a total weight of over 6100 lb.

Starting in a Gale

With this load we started out for the Virgin Islands, with no mother ship in attendance or spares awaiting us enroute other than those we had aboard our ship. Not only did we have a heavy load, but we happened to start on one of the worst days of the winter, the day the Shenandoah broke loose from her mooring mast and drifted over Jersey during a southeast gale.

We had no difficulty in getting off, but shortly after rounding Sandy Hook at an altitude of 400 ft. we began to feel our head wind and noticed that the surf along the Jersey coast was exceptionally rough. We crawled past Atlantic City after two hours, covering 90 mi. When we reached Ocean City, N. J., we were barely making headway against the wind and it began to rain, so we decided to save our motor and fuel, and anchor for the night at Ocean City. After unloading our passengers and baggage we chose a good anchorage and put out both our anchors and riding lights.

On the 17th the weather had cleared, so we proceeded to Manteo, N. C., about 270 mi. south of Ocean City. Here we replenished our fuel for the first time and gave our passengers an opportunity to see the points of interest during the afternoon. To us who have flown the coast many times, Manteo is always a stopping point as we are sure of a fine home-cooked meal with either an abundance of shell fish or wild geese and duck, depending on the season.

600 Miles in 8 Hours

On the 18th, we left Manteo at daybreak, intending to make Daytona, Fla., 600 mi. south, that evening. We had overcast weather, but a fifteen mile wind on our tail took us in 6½ hr. to Fernandina, Fla., where we replenished our fuel and oil. One hour and a half after leaving Fernandina we landed at the Daytona Yacht Club in Daytona, having covered 600 mi. in 8 hr.

The following morning at eleven o'clock we had filled our tanks and were ready for a long jump to Key West, but fate was against us. A dead calm in the river and the warm weather of Florida caused our motor to overheat in getting off, although we had removed the shutters and drained the alcohol from the radiator. Before we had got off, the radiator began leaking in five or six places causing us to taxi back to the Yacht Club, where we found upon investigation that the relief valve in the radiator filler neck had been screwed down to a point where the pressure in the radiator could not lift the valve. Thus the steam formed by overheating had blown out the radiator. Fortunately, we found a good radiator repair station and were able to get the radiator re-built over night. Before again attempting to leave we took care to remove the relief valve from the radiator.

The following morning we left Daytona, and landed at Miami 4½ hr. later with a leaky oil tank. We stopped there because we knew that we could obtain in Miami a standard HS boat oil tank that would fit our boat, and replace the aluminum tank that had opened up along the seam where it had been welded. Upon arrival in Miami we received a telegram from the factory advising us to await further instructions. For five days we loafed in Miami until we received a wire authorizing us to continue our trip as planned.

On Jan. 25 we left Miami and arrived in Key West 2 hr. 15 min. later. Being a conservative crowd, we remained in Key West for three days awaiting decent weather before jumping across to Matanzas, Cuba, where we landed on the 29th.

Making the Trip Pay

Before leaving the factory we had agreed to finance the entire trip to Porto Rico and return, paying all salaries and operating expenses by carrying passengers. The factory advanced us $500 when we left, but by the time we reached Matanzas our expenses had amounted to $528 and so we started to work right away.

Our first day in Cuba we succeeded in getting four passengers at $10 each for a ten minute flight over Matanzas. This money helped, but we were headed for the rocks unless we could get more of it coming our way at a faster rate, so the following day we reduced our price to $5 a head. The new price proved very popular and within six days after landing in Cuba we were able to send the factory $1400, which covered the money advanced us and our salaries a few weeks in advance. Besides this we had a neat working capital on hand as a reserve fund.

From Matanzas we worked our way down the north coast of Cuba stopping at all the principal cities for a period of three days to a week depending on the amount of business. We were on the north coast of Cuba from Jan. 28 to March 1, carrying passengers in all kinds of weather from all kinds of harbors. In some places we operated in open ports where the sea was rough, yet we handled seven passengers at a time and had no trouble whatsoever with our hull.

An aluminum fuel tank then started leaking, and we ordered new ones made of terne plate from the factory, but while waiting for these tanks we continued to operate using only one of our upper tanks. Before leaving Cuba the new tanks arrived by express and we installed them at Cardenas, where we also changed a leaky cylinder.

On March 4, after taking on a full load of fuel, consisting of 210 gal. of gasoline and 15 gal. of oil, we left the ocean out in front of Baracoa harbor at 7 a. m. and landed that evening in Lake Tortugas, 40 mi. west of San Juan, P. R., having covered 600 mi. against strong northeast trade winds.

An Unscheduled Event

Just before reaching this lake, while cruising low along the north coast of Porto Rico and racing against darkness, a shortage of fuel stopped our motor, causing a forced landing not over 100 yd. from the rocky coast in a sea running approximately 8 ft. high. We recall hitting one wave, going through the second one, and coming to a stop astride the third wave. For a few minutes it looked as if the boat was lost, for the breakers were high on the rocky shore and the water was too deep to anchor. But upon examination we found we still had a little fuel left in one upper tank, for as we had been banking to take care of side drift the fuel had run to one tank, starving the carburetors. By leveling up the ship we were able to start our motor again. The ship was light and we were able to get off after pounding over a couple of big waves. We were fortunate in being near this lake that runs parallel to the coast and we wasted no time in getting into it.

The following morning we flew into San Juan harbor where a reception was awaiting us. As our motor had only had 105 hr. and was still going strong, we decided to continue operating in Porto Rico before changing our motor for the return flight. Between March 5, when we arrived in Porto Rico, and April 2, we were operating daily, carrying passen-

perature has annoying effect upon the interplane and control wires due to their contraction, and upon the control bearing surfaces due to coagulation of the lubricant. Our remedy for this was to rig the wires loosely and to thoroughly clean the bearings and use a very thin oil.

The behavior of the airplane in the rarefied atmosphere of 30,000 ft. and above is quite normal. Stalling and the recovery from the stall, so far as we can observe, is the same as at lower altitudes.

We have encountered no prevailing wind of high velocity, estimating the maximum at 60 mi./hr. and the average in the neighborhood of 40 mi./hr. Our greatest worry in regard to the prevailing wind is a condition that would probably only exist on the east coast. That is, that since the prevailing wind is from west to east, that a parachute descent would undoubtedly carry one out to sea unless the flight is carried well inland.

In general we now feel that there is no reason why this work may not be taken up without the timidity or anxiety to which we must confess in our initial attempts. We trust that this information will be of value to those who in the future will enter this work as a new field.

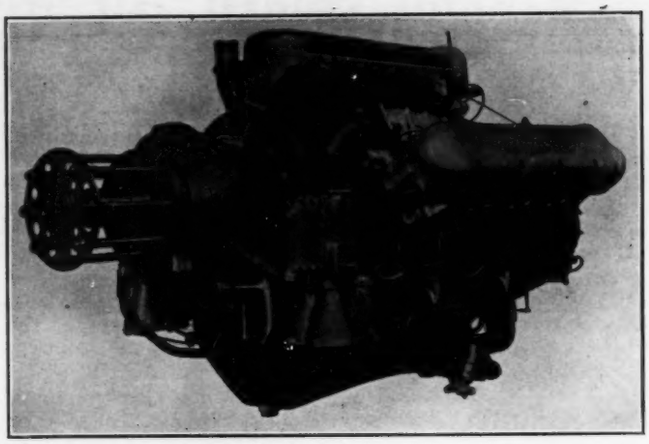
Napier Aero Engines

In the great progress which has been made during the last few years in aviation, the Napier 450 hp. aero engine—known in the British Royal Air Force as the Napier "Lion"—has performed a most important part.

Originally designed to satisfy military conditions, it was decided after the Armistice to continue the manufacture and development of Napier aero engines. Since the cessation of hostilities large orders have been received from British and foreign governments for the 450 hp. Napier engine which is used with considerable success in military and naval services. The Napier is also giving great satisfaction on the European commercial service. More Napier engines are employed than any other type, and one Napier engine alone has recently completed 100,000 mi., which means 1000 hr. actual flying.

The result of the last British government aircraft competitions was a complete success for the Napier engine, as the highest prize in each class—large airplanes, small airplanes and amphibians—was awarded to Napier engined machines.

A noticeable feature of the 450 hp. Napier is its light weight for power developed and compactness. Its total weight is only 900 lb., that is 2 lb. per hp., yet its novel design (triple 4 cylinder fan shaped) keeps its overall length including gear box down to 4 ft. 9 in. This remarkable compactness, in addition to giving a neater appearance to the machine to which it is fitted by reason of the small amount of space it occupies, adds life to the machine and considerably reduces the noise. As a matter of fact, the noise in the air of the 450 hp. Napier is much less than with engines of considerably less horsepower.



The Napier "Lion" 450 hp. aircraft engine, a W type with three banks of four cylinders and geared propeller drive

For the last three years the Napier engine has been successful in winning the British Aerial Derby and in 1921 not only was the machine successful in finishing in the fastest time, but in addition secured the Handicap Prize. Another achievement which made the Napier famous, was the winning of the Schneider Cup in August, 1922. This trophy was won by Captain Biard on the Napier Supermarine flying boat—this success being Britain's first international win since 1914.

The power and reliability of the Napier has been thoroughly proved. It is only by the greatest care and microscopical accuracy in the manufacture of every detail in the Napier engines, that such results can be obtained. From the time the metal in its rough state arrives and is tested chemically and physically at the factory, to the time the complete engine is assembled, it passes through hundreds of hands, and after each operation it is thoroughly examined and proved before being built into the engine.

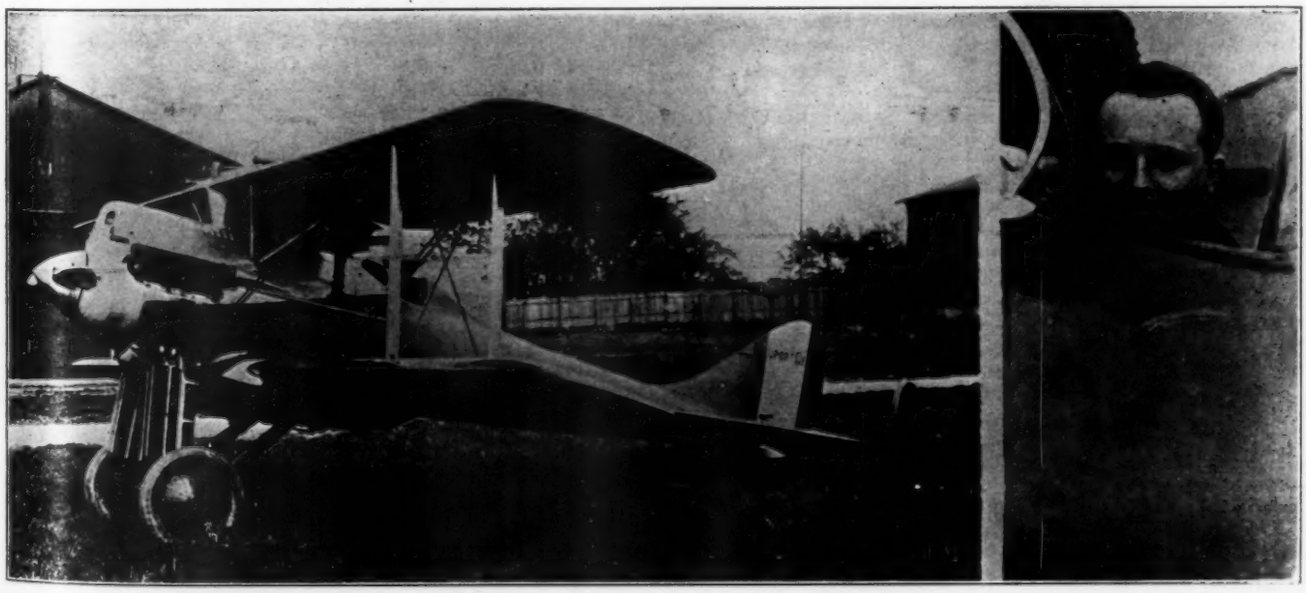


Photo Kadel & Herbert

The latest Nieuport racer in which Sadi Lecointe (on right side) will attempt to break several world's speed-over-distance records. Note the mounting of the new Lamblin strut radiators on the landing gear

Equipment Required for High Altitude Flying*

By PAUL B. KING and THOMAS CARROLL

Early in the flight work incidental to the development of supercharged engines at the Committee's Laboratory at Langley Field, we were somewhat astonished to find that the information concerning this branch of flying was very meager. As our experience developed, we were further surprised to find that even this fragmentary information was unreliable; that it was apparently collected rather for its news value than for its value as scientific data.

The effect of high altitude or low atmospheric pressure upon the operation of an engine was theoretically well known. The effect of the low pressure and lack of oxygen, and of the very low temperatures upon the pilot and likewise upon the performance of the airplane itself was not so well known. There was also a divergence of opinion concerning the use of oxygen apparatus according to the previous experience of American and British practice.

Oxygen and Physical Comfort

The use or abuse of the oxygen equipment appears to have the greatest influence upon the physical comfort and efficiency of the pilot while engaged in flights above 15,000 ft. We consequently will mention that important feature first.

It is of the greatest importance that the oxygen should be of the purest grade and thoroughly dried. The drying is important because moisture may collect in the tubes or valves and is apt to freeze, causing a stoppage. Care should be taken that oil is excluded from all internal parts of the apparatus as the presence of even a minute quantity of oil, if inhaled, is nauseating.

Automatic oxygen control we learned to have been unsatisfactory and we have never attempted its use. The simple manual control which we adopted has always functioned perfectly and we have never contemplated a change. This consists of a conventional hookup of five bottles, each of three liter capacity and under 1500 lb. pressure, connected to a common header with a single lead to a high pressure gage and a manually operated reducing valve. This valve is of a type in common use with oxyacetylene welding outfits. From the valve a lead is carried to a flow meter graduated in "liters per minute" and thence directly by a rubber tube to the face mask. The mask is of rubberized fabric, fur lined about the edging, covering the entire face from the bridge of the nose down to well under the chin. The intake is through a tube just over the nostrils and at the chin there is a simple rubber flap exhaust valve. The sixth oxygen bottle is provided for emergency use controlled only by the bottle valve and having another rubber tube attached.

A difference of opinion exists as to the proper altitude to begin the use of oxygen. We believe that it should be taken immediately the slightest need is felt, and in ordinary cases preferably at and above 15,000 ft. and certainly not later than 18,000 ft. No advantage can be gained by delaying its use as such delay can only accomplish a drain upon the body reserve inducing fatigue both during and following the flight.

Amount of Oxygen Needed

Concerning the amount of oxygen to be taken as indicated by the flowmeter, we suggest that from 2.7 to 3 liters per minute be used up to 25,000 ft., gradually increasing above that altitude to 3½ or 4 liters per minute with a possible maximum of 4½ liters at 35,000 ft. The individual must determine for himself what the requirements of his system are; the foregoing is merely a guide indicated from our experience as the normal requirement. The effects of too little oxygen will be immediately distinguished in dizziness, drowsiness and impaired vision. Of too great an amount the effects will unfortunately not be noticed until a day or two later when it will be evidenced by sore lungs.

In descending it is best to continue the use of oxygen to a fairly low altitude; we would recommend to 10,000 ft. This will alleviate the uncomfortable feeling and deafness usually accompanying the descent. On the descent a decrease in the flow rate should be made corresponding to the increase in rate on the climb as indicated by the flowmeter.

In the operation of the control valve it will be noted that as the altitude increases, and due to the drop in external pressure, the flow will tend to increase at too rapid a rate and this must be checked by a manipulation of the valve. On the descent the contrariwise will be found.

We have noticed that the best work can be done more comfortably when a heavy diet and any appreciable amount of liquids are refrained from on the day of the flight.

Protection Against the Cold

As to the effects of the extreme cold we have but little trouble. A fur-lined leather flying suit together with fleece-lined moccasins of the usual Air Service style constituted the clothing equipment used. These were not of the electrically heated type, nor was the necessity for such heating felt. The ordinary fur-lined helmet was augmented by an additional helmet, somewhat larger, fitted over the first. Gauntlet gloves of the type having the index finger separate and the remaining three fingers in one were used because it was necessary for the pilot to write observation data during the flights. A chamois face mask was tried but was discarded as unnecessary since the oxygen mask covered all of the lower face comfortably. Gogglettes No. 6 were used and were quite satisfactory although a second pair was carried in the event of fogging and freezing. Part of the ordinary clothing was discarded and a suit of very heavy silk underwear substituted. This added warmth and was less bulky. Two pairs of heavy woolen socks were worn without shoes other than the moccasins. This outfit was found to be quite satisfactory and no discomfort was felt with the exception of the fingers. Ordinarily, were it not required to use the hands other than in piloting, a heavy double mitten would be preferable. We are now attempting the use of electrically heated grips on the controls but since the work is temporarily stopped during changes in the equipment we cannot report their efficacy.

It is obviously wiser to refrain from any physical exertion particularly during warm weather just prior to the flight, since if the body is damp with perspiration the effect of the low temperature will be the greater. It is better to wait until the body has cooled and damp clothing is removed if necessary.

No After-Effects Felt

We have experienced no after-effects from this nature of work nor from the use of oxygen. There has been no extraordinary fatigue following any flight, and the same pilot has many times made other flights of more ordinary character within a few hours after the completion of a high altitude flight. Even two of these flights have been made on the same day and a number have been made on successive days without deleterious effect. Immediately following a number of these flights, the pilot involved has submitted to a physical examination by a physician and no after-effect has been noted.

Likewise, we have been unable to note any effect upon the system due to the low atmospheric pressure, at least none that is not corrected by the proper use of oxygen. In fact, we would impress the point that the proper and careful use of oxygen eliminates all of the unpleasant and unusual elements of the work. Most of the uncomfortable feeling is occasioned from psychological causes rather than physiological. Even the pilot of experience is prone to favor his imagination in the monotony and lonesomeness of high altitude flights. Peculiarly, even this difficulty is remedied by the proper use of oxygen.

We believe that the foregoing encompasses all of the hazards together with their remedies so far as the effect upon the physical condition of the pilot is concerned.

Of the airplane itself we have found that the low tem-

*N.A.C.A. Technical Note No. 193.

National Guard Air Meet at New Dorp, S. I.

Organized by 27th Division Air Service, Saturday, June 28

The first annual aviation meet of the 27th Division Air Service (102d Squadron, N. Y. National Guard) will he held Saturday, June 28, at New Dorp, S. I., N. Y. A great variety of interesting events has been arranged, as will be seen from the program printed below, and it is hoped that all who can do so will not fail to attend the meet. New York City has not had an aviation meet for a long time, and the demonstration scheduled to take place at Miller Field will afford all lovers of flying a unique opportunity to see some real air races, in addition to other contests. It is also hoped that New Yorkers will show local pride in the 102d Air Squadron, N.Y.N.G., commanded by Maj. George A. Vaughn, jr., which is organizing the meet, and which will compete in one event with National Guard squadrons from other States.

Program of Events

The program of events scheduled is as follows:

(1) Formation Flight, 11 a. m. First and second prizes, silver cups to the winning teams.

(2) Landing to a Mark, 11:30 a. m. -Open to all types of airplanes. Throttles must be closed at a height of at least 500 ft. from the ground and directly over the circle. Each plane will be allowed three trials at landing within a given circle. First and second prizes, silver cups.

(3) Altitude Race, 12 noon. Open to all types of airplanes. Machines must take off and land in less than 20 min. First and second prizes silver cups.

(4) Tank Demonstration. Time to be announced later. Through the courtesy of the First Tank Company, a demonstration of tanks in action will be given.

(5) Seaplane Race 1 p. m. Open to all types of seaplane. Distance 20 mi. First and second prizes, silver cups.

(6) Relay Race, Mixed Types, 1:30 p. m. Teams will be permitted to enter this event up to 1 p. m. on Saturday, June 28. Three planes will constitute a team, one plane must be a regulation JNH; one plane must be a regulation DH; rules governing the third plane will be announced later. Each plane must fly ten miles. Individual silver cups to members of the winning team.

(7) Stunt Flying, 2 p. m. Open to all types of airplanes. Prizes to be awarded on variety of stunts and ability shown in maneuvering. First and second prizes, silver cups.

(8) DH Speed Race, 2:30 p. m. Open only to regulation DH planes. Distance 50 mi. cross country to Mitchel Field and return. First, second and third prizes, silver cups.

(9) National Guard Speed Race, 3 p. m. Open only to regulation JNH airplanes and qualified National Guard pilots. Distance 20 mi. First, second and third prizes, silver cups.

(10) Laying Smoke Screen. Time to be announced later. A demonstration will be given of laying a smoke screen from an airplane in flight.

(11) Open Speed Race, 3:30 p. m. Open to all types of airplanes. Distance 30 mi. First, second and third prizes, silver cups.

(12) Parachute Jumping. Time to be announced later. A demonstration will be given of parachute jumping from an airplane in flight. First and second prizes, silver cups.

(13) On to Miller Field. A prize of a silver cup will be awarded to the organization sending the greatest number of planes to the meet.

Entries will close one week before on June 21, 1924, at 6:00 p. m. and should be addressed to Capt. Curtis Wheeler, Chairman of Committee on Events, Miller Field, New Dorp, S. I., N. Y. No entry fee will be charged.

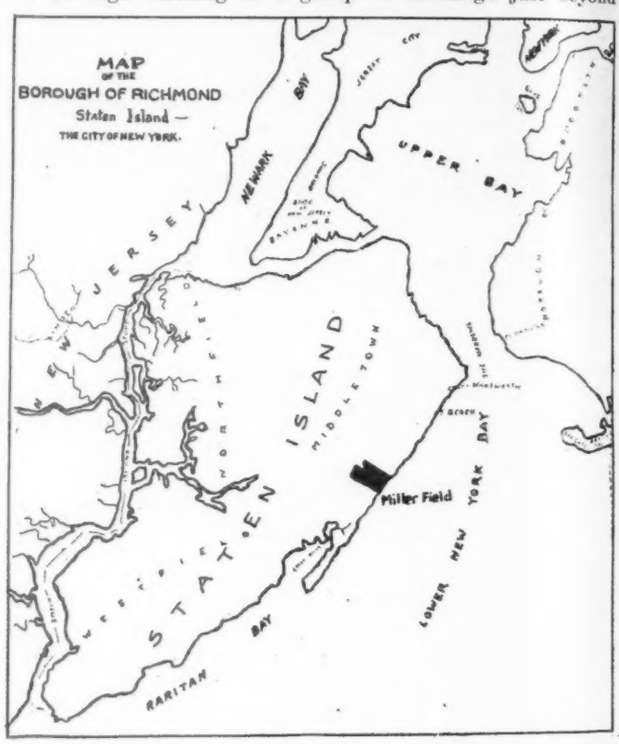
Instructions for Visiting Ships

The meet will open officially at 11 a. m., Saturday, June 28 and close at 6 p. m. Visiting ships may report at any time after noon on Friday, June 27. Arrangements for servicing of ships and care of crews will be completed at that time. Ships reporting for scheduled competition later than one hour prior to the time fixed for the start of their events may, in the discretion of the Events Committee, be disqualified.

Visiting ships must be reported, on arrival, to Capt. Lawrence G. Brower, Officer in Charge of Flying, who will assign hangar space, arrange for service, and furnish information as to further procedure. Flights of two or more ships will be reported as a group by the flight leader.

The field is marked by a white circle in the center and by a landing T placed near the hangar, southwest corner.

Warning. Pilots are especially warned of *three radio masts* 90 ft. high standing in a group of buildings just beyond



Map showing position of Miller Field, New Dorp, S. I., with reference to Greater New York

northwest corner of the field. These masts are very difficult to distinguish. No pilot should attempt to land until he has carefully reconnoitered them. Along roadways bounding easterly and westerly extremities of field are lines of overhead wires 20 ft. above ground. Just inside southeast corner of field is a frame-and-wire baseball backstop, 15 ft. wide by 10 ft. high. All other obstacles are clearly visible.

All clear spaces within roadways outlining the field are good landing ground. After landing, all ships will be taxied to the line just north of the concrete roadway flanking the hangars. The hangars are situated between this roadway and the beach, in the southwest corner of the post. An alert crew will be on duty throughout the period of the meet—Friday noon to Sunday night—to receive visiting ships and escort them to the line.

It is requested that arriving ships make one circuit of the field at low altitude. All turns in the vicinity of the field will be to the left. All landings will be made to the T.

General rules governing flying discipline during the meet will conform to existing Air Service Regulations.

It is requested that, wherever possible, contestants notify Miller Field by wire of the probable time of arrival. Address all telegrams to Capt. George L. Usher, Miller Field, New Dorp, Staten Isand, New York City.

Photo Kadel & Herbert

An historic event—The first air-borne Americans land in Japan. Lieut. Erik Nelson, pilot, and Lieut. John Harding, mechanic, ready to step on shore from the plane New Orleans on Lake Kasumi and receive the greetings of Japanese officials and Americans

Belgium Wins G. B. Cup

Seventeen balloonists, representing seven nations, took off on June 15 from the great Solbosch plain, just outside of Brussels, Belgium, in the fourteenth annual contest for the James Gordon Bennett international balloon cup. Although electrical storms threatened the eve of the race, the weather was almost perfect the day of the start. A crowd estimated at 200,000 people witnessed the start.

The balloons were sent off at five minute intervals beginning at 4:30 p. m. in the order as follows:

1. Belgica (Belgium). Pilot Ernest Demuyter.
2. Picardie (France). Pilot Maurice Bienaimé.
3. Helvetia (Switzerland). Pilot Capt. Paul Armbruster.
4. Goodyear III (United States). Pilot W. T. Van Orman.
5. Aerostiere (Italy). Pilot Major Grassi.
6. Margaret (Great Britain). Pilot E. Allen.
7. Magdalena (Spain). Pilot Fernandez Douro.
8. Ville-de-Bruxelles (Belgium). Lieut. E. Labrousse.
9. Ville-de-Bordeaux (France). Pilot F. Laporte.
10. Uncle Sam (United States). Pilot H. E. Honeywell.
11. Ciampino (Italy). Pilot Maj. J. Valle.
12. Banshee III (Great Britain). Pilot Major Baldwin.
13. Capitan (Spain). Pilot Penaranda Baroa.
14. Prince-Leopold (Belgium). Pilot Veenstra.
15. Anjou (France). Pilot Georges Cormier.
16. S-14 (United States). Pilot Maj. Norman Peck, U.S.A.
17. Hesperio (Spain). Pilot Casas.

Last minute reports state that the race was won by Demuyter, who landed at Abb's Head, 40 mi. east of Edinburgh, Scotland, covering a distance of 745 mi. By this victory the famous cup remains in permanent possession of Belgium.

The French pilot Laporte, who was the only other contestant to cross the English Channel, landed at Brighton, England, covering 198 mi. and securing second place. Honeywell was third with 180 mi.

American World Flight

The three American World Fliers who arrived at Hong Kong on June 8 were delayed there by bad weather. On June 11 they made the flight to Haiphong, a distance of 500 mi. in 6 hr. 28 min. On Friday the 13th the trio started the 395 mi. flight to Tourane, French Indo China. Planes 3 and 4 piloted by Lieutenants Wade and Nelson reached their destination successfully but the flag plane Chicago, which is piloted by Lieutenant Smith, ran out of water and was forced down some 55 mi. north of Tourane. The plane was towed into Hué and a new motor shipped up from Saigon. The installation of the new motor is said to have been completed by the evening of the next day. The next hop should take the fliers out of the Chinese typhoon area.

British World Flight

The spare plane rushed from Hakodate, Japan, to Akyab, Burma, to enable Major Maclaren, the leader of the British round the world flight to resume his journey, arrived at Akyab on June 13. The plane was carried from Hakodate to Hongkong, China, on board the U. S. destroyer John Paul Jones, and from Hongkong to Akyab on another American destroyer, the Preston.

Major Maclaren has been at Akyab since May 24, when his plane crashed on taking off for Rangoon.

Doisy Completes his Flight

Capt. Pelletier Doisy and his mechanic, Sergeant Besin, successfully completed their 11,000 mi. flight from Paris to Tokyo on June 9, when they landed at Tokorozawa airdrome, about 30 mi. from the Japanese capital. The two airmen flew on the previous day from Hiroshima, where they landed after crossing the Corean Strait, to Osaka, and on June 9 from Osaka to Tokyo.

The total elapsed time of the flight was forty-five days, or less than one-half the time taken in 1920 by the Italian pilot Ferrarin, who flew from Rome to Tokyo over almost the same route, covering nearly the same distance in 104 days.

Loening Amphibian Tested

A new type of amphibian, built for the Army Air Service by the Loening Aeronautical Corp. of New York, was successfully tested on June 8. The plane left the landing of the corporation at the foot of East Thirty-first Street, New York, as a seaplane, piloted by Lieut. W. H. Brookley, and flew to Mitchel Field, Mineola, L. I., where it made several landings. On its return flight to New York Lieutenant Brookley piloted it under the Brooklyn Bridge.

Aviation in Congress

AIR MAIL APPROPRIATION

Mch. 7. Senate.

The Treasury and Post Office Departments Appropriation Bill (H.R. 6349) with amendments passed the Senate, including the amendments for the Air Mail Service as follows: Amendment 43—For the operation and maintenance of the airplane mail service between New York, N. Y., and San Francisco, Calif., via Chicago, Ill., and Omaha, Neb., including necessary incidental expenses and employment of necessary personnel, $1,500,000.

Amendment 44—For an additional amount for the installation, equipment and operation of the airplane mail service by night flying, and to enable the department to make the additional charges for both night and day service on first-class mail matter, in accordance with existing law, $1,500,000.

This bill with amendments was returned to the House.

Mch. 8. House.

Mr. Madden asked unanimous consent that the bill (H.R. 6349) just returned by the Senate be taken from the Speaker's Table, the Senate amendments disagreed to, and the bill sent to conference. This was done.

Mch. 10. Senate.

The Presiding Officer laid before the Senate the action of the House of Representatives disagreeing to the amendments of the Senate to the bill (H.R. 6349), and requesting a conference with the Senate on the disagreeing votes of the two Houses thereon. Mr. Warren moved that the Senate insist upon its amendments, that it accept the invitation of the House for the appointment of conferees, and that the Presiding Officer appoint the conferees on the part of the Senate. The motion was agreed to, and the Presiding Officer appointed Mr. Warren, Mr. Smoot, Mr. Moses, Mr. Overman and Mr. Glass conferees on the part of the Senate. Mr. Madden, Mr. Vare and Mr. Byrns of Tennessee were appointed conferees on the part of the House.

Mch. 28.

The recommendations of the Conference Committee on the disagreeing votes of the two Houses on the amendments of the Senate to the bill (H.R. 6349) were reported to both the Senate and the House. The Committee of Conference had not agreed on amendments numbered 1, 2, 43 and 44. The report with these exceptions was agreed to in the Senate.

Mch. 29. House.

Mr. Madden called up the report of the Conference Committee on the bill (H.R. 6349). The House receded from its disagreement to Senate amendment No. 1 and agrees to same with an amendment; recedes and concurs in Senate amendments Nos. 2 and 43; recedes from its disagreement to Senate amendment No. 44 and agrees to same with an amendment, that the amount for the air mail night flying be changed from $1,500,000 to $1,250,000. The report was agreed to.

Mch. 31. Senate.

The Chair laid before the Senate the action of the House on the Conference Report. Mr. Warren moved that the Senate concur in the amendments of the House to the amendments of the Senate Nos. 1 and 44. This motion was agreed to.

ARMY AIR APPROPRIATION

Mch. 13. House.

Mr. Anthony: A bill (H.R. 7877) making appropriation for the military and non-military activities of the War Department for the fiscal year ending June 30, 1925, and for other purposes, Committed to Committee of Whole House on the state of the Union.

Mch. 29.

After discussion and debate the bill (H.R. 7877) with amendments passed the House.

Mch. 31. Senate.

The bill (H.R. 7877) was referred to the Senate Committee on Appropriations.

Apr. 11.

The above bill with amendments was reported back from the Committee on Appropriations and placed on the calendar.

NAVAL AIR APPROPRIATION

Mch. 15. House.

The House resolved itself into the Committee of the Whole House on the state of the Union and proceeded to consider the Navy Department Appropriation Bill (H.R. 6820).

Mch. 21.

The two provisos in the paragraph on the Bureau of Aeronautics went out on a point of order because of new legislation contained therein. The following amendment was immediately offered by Mr. French; To, on page 38, line 1, after the word "Provided" strike out the word "further." This amendment was agreed to.

The Chairman of the Whole House on the state of the Union reported that that Committee, having under consideration the bill (H.R. 6820) making appropriations for the Navy Department and the Naval Service for the fiscal year endings June 30, 1925, and for other purposes, had directed him to report the same back with sundry amendments, with the recommendation that the amendments be agreed to and the bill as amended be passed. The amendments were agreed to. The bill as amended was ordered to be engrossed and read a third time, and was read a third time. Mr. Blanton offered a motion to recomit the bill to the Committee on Appropriations with instructions to report the same back to the House with certain amendments. The vote on the motion to recomit was held over until the following morning.

Mch. 22.

The Motion to recomit was rejected. The bill (H.R. 6820) was passed by the House.

Senate.

The Navy Appropriation Bill (H.R. 6820) was referred to the Senate Committee on Appropriations.

Apr. 9.

The bill (H.R. 6820) was reported back with amendments from the Committee on Appropriations and placed on the calendar.

Mch. 24. House.

House Resolution 192, to appoint a committee to inquire into the operations of the U. S. Army Air Service, U. S. Naval Bureau of Aeronautics and the U. S. Air Mail Service (see Legislative Bulletin No. 17) was debated and passed the House with an amendment to increase the number of the Committee from seven to nine.

Apr. 3. House.

Mr. Tincher: A resolution (H. Res. 247) requesting the President to call a conference of Governments to consider economic adjustments and a further limitation of armament, particularly of subsurface and aircraft.

Referred to the Committee on Foreign Affairs.

Apr. 7. Senate.

Mr. Pepper: A resolution (S. Res. 204) advising the President that in the judgment of the Senate a world conference is opportune to consider further reduction in sea, land and air armament; ways to make international law more responsive; and for a World Court.

Referred to the Committee on Foreign Relations.

Apr. 8. House.

The Committee on Post Offices and Post Roads reported the bill (H.R. 3261) (see Legislative Bulletin No. 15) back with amendment.

Referred to Committee of the Whole House on the state of the Union.

—*Aeronautical Chamber of Commerce.*

Free Flight Propeller Tests

N.A.C.A. Report 183

This paper, by Max M. Munk, prepared for publication by the National Advisory Committee for Aeronautics, contains the description of a new and useful method suitable for the design of propellers and for the interpretation of tests with propellers.

The fictitious slipstream velocity computed from the absorbed horsepower is plotted against the relative slip velocity. It is discussed in detail how this velocity is obtained, interpreted, and used. The methods are then illustrated by applying them to model tests and to free flight tests with actual propellers.

A copy of Report No. 183 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

LIGHT PLANES AND GLIDERS

Edited by Edmund T. Allen

The A4 Light Plane

(Continued from last issue)

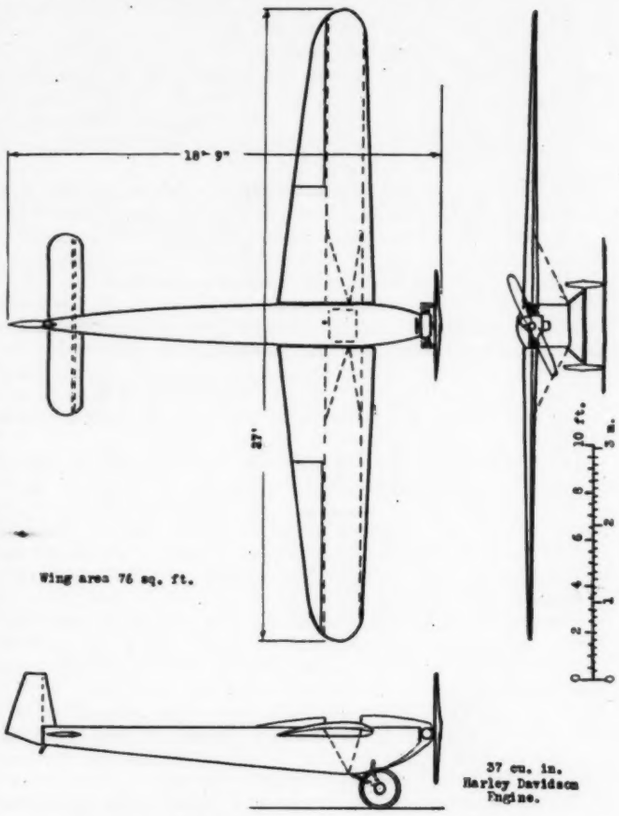
In general, considerations looking toward the least labor, the lightest structural weight and the maximum efficiency, determined the layout of the A4. Therefore the monoplane type, in part because it is structurally the simpler, recommends itself. Semi-cantilever struts serve further to cut down structural weight, to provide for quick disassembly, and to eliminate heavy structural members carried across the front of the cockpit—members that are of danger in a crash. The wing rides at the top of the fuselage rather than at the bottom for three reasons: this position increases aerodynamic efficiency; it gives better visibility, contrary to a popular tradition regarding this position of the wing; and it gives greater wing clearance on such occasions as that of a forced landing in high weeds or brush.

The plan of the wing derives from two factors unique to the problem: aerodynamic efficiency (in this case—maximum distance on minimum fuel) and maximum aspect ratio, without the concomitant increase in the structural weight above a "reasonable amount." In view of the success of the untapered wing of the A.N.E.C. light plane at Lympne last fall, one may doubt if tapered wings give any appreciable increase in aerodynamic efficiency. A comparison of the plan form of the Hannover "Vampyr" and "Greif" may give additional justification to those who believe in straight wings.

Theoretically, the tapered wing, minus the fuselage and engine to disturb the air flow at the middle, would give much better efficiency. It is, however, doubtful if the tip losses are greater than the fuselage interference losses on most machines. The obvious conclusion would be, therefore, to place as large a proportion of the wing surface as possible as far as possible away from *both the wing tips and the fuselage.* Curious as this seeming paradox is, it was actually tried on a French racer, the Gourdou-Lesseure, and the results of the race seemed to justify the greatest hopes of the designers. Since there is so much doubt about what actually happens to the air flow in each particular case, an empirical scale is used in giving additional aspect ratio credit to tapered wings. And within limits increase in aspect ratio is almost directly proportional to increase in L/D. It seemed doubtful if an increase in L/D of aspect ratios above 10 was worth the increase in weight; and 9½ was chosen. Choosing a wing loading of 5 lb./sq. ft., the wing dimensions came out as follows: area 76 sq. ft., span 27 ft., maximum chord 50 in., minimum chord 20 in.

Preliminary performance calculations gave the key to the wing loading. The limiting factor was a minimum climb requirement of at least 200 ft. per minute at sea level. Assuming 7½ hp. and 80 per cent propeller efficiency, 6 hp. is available at the propeller. On the basis of assumptions of parasite drag and of the data on the wing, 3 hp. is required for normal flight, leaving 3 hp. for climbing at the necessary rate.

It is impossible here to go into detailed performance calculation. That must be, after all, the central feature in all airplane design. The foregoing estimate of climb is of the roughest sort. The National Advisory Committee for Aeronautics (3341 Navy Building, Washington, D. C.) has published a report on performance calculation, written by Lieutenant Diehl, giving formulas for finding speed, speed range, ceiling, initial climb, and other factors. These formulae apply to service machines now in use, and they are very accurate for such machines. Whether or not they can be extrapolated into the range of power loading covering light plane design is very doubtful. An attempt was made to figure out the climb of the Sayers-Handley Page light plane with its power loading of 100 lb./hp. with the result of zero climb. The great difficulty is that our estimates of L/D for light planes are of the most unreliable character. The L/D of the A4 was estimated at 12. If it is as low as 9 (which may well be), the initial climb, instead of 200 ft. per minute comes



Outline drawing of the Allen A4 light plane

out 99 ft. per minute. If the L/D is 15 (which is very doubtful), the climb may be as high as 300 ft. per minute.

The formula for stalling speed (in mi./ hr.) is as follows:

$$V_s = 19.8 \sqrt{\frac{\text{Wing Loading}}{\text{Max. Lift Coefficient}}}$$

The speed range is given by the formula

$$\frac{V_m}{V_s} = \frac{20.3\,\eta^{1-3}}{\sqrt[3]{V_s} \times \text{power loading}}$$

where η is the propeller efficiency.

Initial climb,

$$C_o = 33{,}000 \left(\frac{K\eta}{\frac{W}{(\frac{}{H.P.})}} = \frac{(2V_s + V_m)}{1125\,(\frac{L}{D})} \right)$$

in feet per minute

K is here a factor depending on speed range. It has a value of from 0.8 to 0.9 for speed ranges of from 2.2 to 1.5, the most probable range for light planes.

The weight assumption was made on the basis of a careful preliminary analysis of the weights of the component parts. This analysis came out as follows:

33 lb. fuselage, including seat and controls.
65 lb. engine
5 lb. propeller
10 lb. tank and connections
64 lb. wing (30 lb. spars, 10 lb. ribs and bracing, 20 lb. covering, 4 lb. for ailerons and fittings)
18 lb. landing gear
15 lb. tail surfaces
7 lb. fittings

217 lb. net weight
125 lb. pilot
30 lb. fuel

372 lb. gross weight

A total weight of 380 lb. was set as the goal, and a minimum factor of safety of 8 was adopted. If it is realized, this goal of 380 lb. gives what may be the lightest airplane built. It would, of course, have to be increased if the machine were intended for fliers other than its designer, who happens, fortunately to be a lightweight.

On the basis of the calculations, the landing speed is 39.4 mi./hr., somewhat higher than the average light plane landing speed, but more satisfactory than what is known as a floater.

The unusually long fuselage insures safety in rudder control, and it decreases longitudinal damping. It also permits of smaller control surfaces in the tail group. In cross section the fuselage is rectangular for simplicity in construction.

For landing gear, a welded steel tube trapezoid was built up, with the shock absorption taken at the fuselage. One doubts if the semi-enclosed type used on some of the English light planes is practicable, especially for cross country work.

The engine mounting completes the layout. Its simplicity is remarkable, the little Harley being bolted onto the front of the fuselage where the four longerons come into a small bulkhead. At the sides, the cylinders project slightly, and the carburetor extends below the engine, but these will not seriously increase the parasite resistance of the fuselage if the cowling is well formed.

It was difficult in designing to obtain the balance properly. Where the pilot represents such a large percentage of the gross weight, and where in addition he sits between the wing spars, so that when his position is moved backward or forward it is necessary also to move the wings, there is an exasperating problem. It is, however, important very early in the design process to obtain a satisfactory balance, for important structural changes may be necessary if that is not done. In an airplane built recently for the government, the center of gravity was found to be 13,000 inch pounds too far to the rear when the machine was weighed up preliminary to its test flight. It required a large weight in the nose of the fuselage to balance the ship so that it would be safe to fly.

(To be continued)

Current Comments

What has happened to all the glider enthusiasts in America? So far as is known at present, plans for any soaring competition are indefinitely postponed because there are no funds available for prizes. Some of the glider builders transferred their interest to light planes. Others are waiting for the return of the "glider craze" when they will have their opportunity to ride on the wind.

In Germany the problem was solved by holding the competition for both gliders and "motorgliders" together. For with their little auxiliary motors, the German gliders can hardly be called light planes, in spite of their rather spectacular performances.

The 1924 *Rhönsegelflug* competition begins on Aug. 25, and lasts until the 31st. The rules and prizes are printed in full in the April issue of *Der Luftweg*.

* * *

Heralded as the "Ford of the Air," the Dietrich-Gobiet monoplane has aroused great popular interest in Germany. It is, however, distinctly out of the light plane class and can be given but a word here.

The motor used is the Haacke two-cylinder opposed type rated at 30-35 hp. This gives a power loading of 21 lb./hp. with a wing loading of 6.5 lb./sq. ft.

Light planes have been described as experiments in high power loading. The average power loading of the English light planes was above 35 lb./hp.; with one of them going as high as 100 lb./hp. An old designer was once heard to remark, "Anything will fly if you give it a low enough power loading."

* * *

Ferdinand Schulz, a German glider pilot, established a new duration record for gliders during competitive flights at Rossiten, East Prussia, on May 11. Schulz was in the air 8 hr. 42 min. and maintained an average altitude of 150 ft.

As Germany has not yet been readmitted in the F.A.I., following her expulsion from that body during the war, the record made by Schulz will only stand as a German record. The official world duration record for gliders is 8 hr. 4 min., made by Alexis Maneyrol at Vauville, France, on Jan. 29, 1923.

No information regarding Schultz's glider is available. If it is anything like the machine built, transported to the Wasserkuppe and flown by him in 1922, it deserves a double medal. There was not an orthodox bit of construction on his craft, a monoplane built of broom handles and bailing wire, and it was ruled out of the competition by the Technical Committee on safety. Quite undaunted, Herr Schultz flew the machine anyway, and he flew it so well and consistently throughout the meet that he was awarded one of the prizes.

* * *

This year's Rhoen meet, to be held from Aug. 15 to 30, will for the first time since the institution of this now classic German event include contests for light planes. In the past only gliders were admitted in the Rhoen meets.

Engines for single-seaters are limited to 750 cu. cm. (45.75 cu. in.) piston displacement or 66 lb. weight; for two-seaters the limit is 1000 cu. cm. (61 cu. in.) piston displacement or 88 lb. weight. Contestants are apparently authorized to choose the type of limitation; that is, if a machine is officially entered with an engine of 750 cu. cm. capacity then the weight limit will be waived, and vice versa.

It is not known whether the contestants will compete in separate categories in accordance with the type of engine limit they chose.

* * *

The table which is printed below gives the maximum piston displacements allowed in the light plane meets of this year. It will be seen that there is a considerable diversity of opinion on this subject.

However, if it is considered that the German regulations speak of "gliders with auxiliary motors," and not of light planes, while the French meet will be a cross country race of 1500 mi. length, the reasons for the great discrepancy between the minimum and maximum engine limits will perhaps be better appreciated.

TABLE SHOWING ENGINE LIMITS ADOPTED FOR PRINCIPAL LIGHT PLANE MEETS OF 1924

	Single-seater	*Two-seaters*
American (Dayton Meet)	..... 80 cu. in.	.....
Belgian	67 cu. in.	122 cu. in.
British	.....	67 cu. in.
French (Tour de France)	122 cu. in.	183 cu. in.
German (Rhoen Meet)	46 cu. in.	61 cu. in.

* * *

The Belgian Light Plane Meeting opened June 16, and we may expect some very lively performances. This competition is international in character and is open to both single and two-seater light planes. Single-seaters are limited to 67 cu. in. engines, and two-seaters are allowed 122 cu. in. displacement.

The competition is based on a point system which records length of landing run, take-off run, dismantling and assembling time, speed, climb, and economy. It will be interesting to see if the best machine wins the prize, or whether, as opponents of the point competition argue, the prize always goes wrong.

AIRPORTS AND AIRWAYS

Long Island News

The Republican Convention in Cleveland is bringing money into the pockets of aircraft operators. The Curtiss Exhibition Co. is running a daily messenger service from Curtiss Field, Garden City, to Glenn Martin Field at Cleveland, carrying the N. Y. *Times*, the N. Y. *World* and the N. Y. *Herald-Tribune*. The ships assigned to this service—C6 and K6 Orioles—leave Curtiss Field at daybreak and the papers are as a rule placed on sale at Cleveland by 9:30 a. m., when the delegates go to breakfast. This is about the best constructive publicity for air transport that has yet been accomplished, the more so as the same machines generally leave Cleveland on the return trip in the afternoon carrying photographs and films of the Convention.

Among the New York pilots who fly these ships are J. P. Andrews, C. B. D. Collyer, Eugene Johnson, Jim Ray and Wesley L. Smith.

* * *

The Curtiss Exhibition Co. is converting a Seagull flying boat into an amphibian. The machine is intended for special service.

The reconstruction of the commercial DH4 with the Curtiss D12 engine is making good progress. When it will be completed, the Garden City messenger fleet will have another high speed ship at its disposal.

An interesting experimental type of Curtiss-Reed metal propeller was recently seen at Curtiss Field. This propeller is built up of two separate blades which are bolted together at the hub.

The standard Curtiss-Reed propeller, which is now widely used on the Orioles where it gives excellent service, has now an additional "kink" in its outline, which is said to insure even greater efficiency.

* * *

The new Mummert light plane made a successful trial flight last week, with Harvey Mummert, its builder, at the stick. The propeller—a mere toy—is now geared down to the Harley-Davison engine, and as a result the efficiency has been increased.

* * *

Among recent aerial visitors of Curtiss Field was a Camel piloted by C. D. Chamberlin, president of the Chamberlin-Rowe Aircraft Corp. of Hasbrouck Heights, N. J. Mr. Chamberlin likes to "look in" every now and then on the various flying fields near New York, and finds that he saves a lot of valuable time by taking the air route.

* * *

The private flying boat now under construction near Garden City for Harold S. Vanderbilt is rapidly nearing completion. The hull is nearly fully plated, the Napier Lion has been installed on the engine bed, and the duralumin tube wing frames are finished.

Flying trials will probably be held within a month or so.

* * *

Everything is in readiness for the inauguration of the through transcontinental service of the Air Mail which starts on July 1. It is hoped that every reader of AVIATION will do his bit in enlightening his non-flying relatives and friends as to the practical meaning of this great accomplishment, and tell them that for 24 cents the Air Mail will, from now on, carry a letter from New York to San Francisco, or vice versa, in about 36 hr. as against some five days taken by the railroads.

Cleveland News

By Cy Caldwell

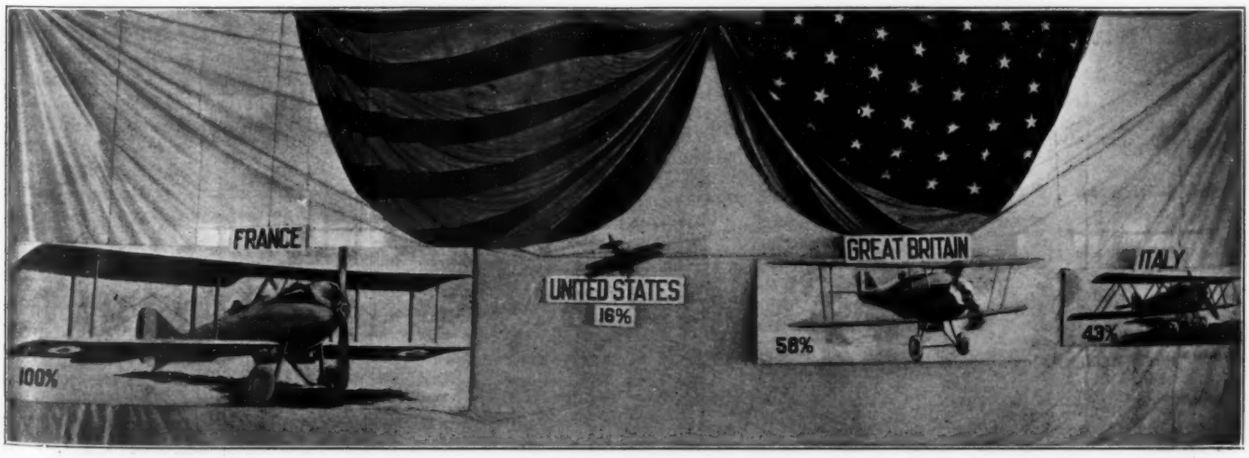
Shirley Short of the Air Mail ferried from Chicago an OX Standard for Jos. M. Khas, who is now taking lessons with Air Mail Pilot Ward.

Wesley L. Smith of the Air Mail in an Ansaldo SVA flew from New York to Michigan City in 6½ hr. flying time, returning to Cleveland May 31 in 2 hr. 20 min. with fight pictures. Smith hasn't the punch of Gibbons but he has more speed. He is retained by P. & A. News Photos to fly their pictures of the Republican Convention to Chicago.

Eugene Johnson of the Air Mail arrived from New York on June 9 with 450 lb. of *The New York Times*, some 800 copies, for Convention members. He returned to New York same day to repeat the trip on the 10th.

The new Glenn L. Martin Commercial Plane was tested June 6 and 7 and has proved itself a plane of considerable merit. Photographs and specifications with performance data will appear in due course in AVIATION.

On June 10 W. W. Meyer arrived from Chicago flying for the *Herald-Examiner*, in a Heath Favorite; J. P. Andrews, flying a Curtiss Oriole for the *World-Tribune Newspapers* and Eugene Johnson, both from New York landed with 1000 copies of the *New York Times*.

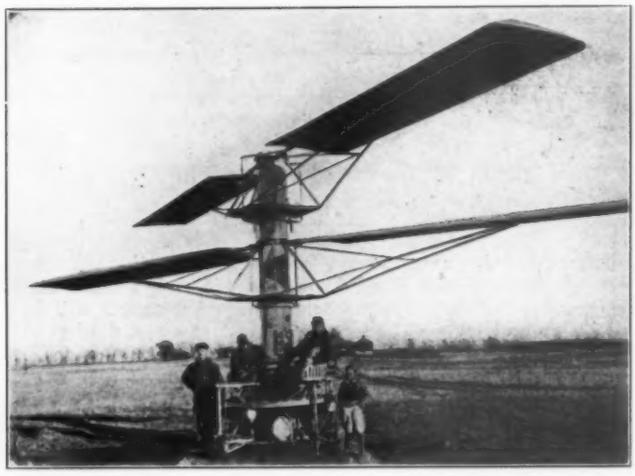


Comparative strength of the leading Air Forces of the world, as shown at the National Security League Banquet in New York City

Model of Mail Airway Shown

A wonderfully realistic scale model of the transcontinental airway of the Air Mail Service is on exhibition in Times Building, New York, where it attracts great crowds.

The model consists of a cabinet, 23 ft. long, which contains a map of the United States showing in contrasting fashion the day and night flying divisions of the Air Mail. Over the map revolve two belts, from each of which a miniature airplane, about an inch and a half long, is suspended. The planes are exact models of the standard De Haviland planes



Helicopter built by the Chicago Helicopter, Ltd. William T. Strong, the inventor, is in the pilot's seat

used in the Air Mail Service. One plane starts from New York at the same time the other leaves San Francisco.

They move slowly toward each other, bright lights showing they started in the sunshine of early morning. When the westbound plane approaches Chicago and the eastbound craft near Cheyenne, the lights change indicating the setting of the sun. This is represented by red lamps, and these are superseded by a blue as twilight falls.

To visualize the night, all the lights above the map are turned out, and from beneath it, through pin holes made to represent the searchlights to guide the fliers, flash the intermittent rays of incandescent lamps. These pinholes, about a third of an inch apart, extend all the way from Chicago to Cheyenne, between which cities the real planes will fly during the night. For the actual flying they have been placed every three miles along the entire course of 885 mi. from Chicago to Cheyenne.

After Cheyenne is reached by the westbound plane, and the eastbound plane leaves Chicago, the lights again change showing the gradual transition from night to daylight.

The model was set up under the direction of J. E. Whitbeck, Superintendent of the Eastern Division of the Air Mail Service, and with the approval of Joseph Johnson, Commissioner of Public Works. It was constructed at the request of Paul Henderson, Second Assistant Postmaster General, by the Air Mail Repair Depot, in Maywood, Ill. The purpose of the exhibit is to draw attention to the speed of the Air Mail Service and thus increase its use by individuals and corporations. The Times Wide World Service has already decided to send its photographs by the Air Mail Service, thereby saving three days in the trip from the East to the West Coast.

Development of British Air Traffic

The remarkable growth in air traffic between the United Kingdom and the Continent is indicated by recent figures transmitted by an American Consul to the Department of Commerce, showing that by the end of 1923 air transport had carried 45,531 passengers to or from the Continent, British aircraft accounting for 33,362 (73 per cent) of this total. The traffic increase in 1923 surpassed the rate in the previous year, with a total of 15,137 passengers and over 800 tons of goods as compared with 12,359 passengers and 477 tons of goods in 1922. British machines carried 79 per cent of the passengers in 1923 and 77 per cent in 1922.

The average load carried in each flight by the British cross-channel air lines increased from 810 lb. (3 or 4 passengers and about 150 lb. of goods) in 1922 to 1200 lb. (4 or 5 passengers) and about 270 lb. of goods in 1923. The value of British and foreign merchandise thus imported and exported amounted to £3,180,319.

The mileage flown in 1923 by British commercial aircraft was 943,000, an increase of 226,000 over the mileage in 1922. The reliability of British air lines was maintained at about the same level as in 1922, in spite of the fact that new routes were opened and longer flights made. On the London-Paris route, the flights completed in 1922 within the time limits fixed under the subsidy scheme amounted to 92.5 per cent of the total; the corresponding figure for all routes in 1923 was 91 per cent.

A regular daily air mail service was inaugurated during April between Manchester (England) and Belfast (Ireland). Grounds had already been purchased and perpared at both terminals, and an airplane, operated by the De Haviland Aircraft Company, is used which is capable of carrying four passengers or 1000 lb. of freight or mails.

It is reported that the Chamber of Commerce of Plymouth has communicated with the Chambers of Commerce in London, Manchester, Birmingham, Cardiff and Belfast, with a view to calling a conference on the question of establishing a regular air service between those cities. The Plymouth Chamber is said to have made the proposal that in consideration of an aviation company supplying a service to all or to some of these cities, an amount not exceeding £16,500 will be granted to it. The plan, however, has not as yet been fully developed.

To Photograph Amazon from the Air

A new expedition into the unexplored regions of the Amazon River under the command of Dr. Alexander Hamilton Rice is preparing to get underway from Manaos, Brazil.

Dr. Rice will use a large steel boat as his operating base and two flying boats for his aerial survey work. Lieut. Walter Hinton will be in charge of flying, and Capt. A. W. Stevens in charge of aerial photography.

The Fairchild Aerial Camera Corp. has supplied all the apparatus necessary for making a complete aerial survey of sections of the Amazon River. The equipment includes the new 6-mile camera which was specially built for high altitude work.

Captain Stevens is also taking with him photographic apparatus ordered by the Brazilian Government.

Tests of Airship Girders

Tests to determine the possibility of getting greater strength for the same weight in airship girders are being undertaken by the Bureau of Standards. Such girders carry loads in compression or bending or both and their strength depends upon their design as well as upon the strength of the material. In the best duralumin girders of today the Bureau of Standards finds it possible to apply a load of only 20,000 lb. per square inch of the metal, whereas the metal itself will not yield under compressive stresses of over 30,000 lb. per square inch. It is thought that better design, resulting in making all parts equally strong, may result in the strength of the girder approaching more nearly the strength of the metal. The correct calculation of the strength of such girders is considered impossible, and it will be necessary to make girders and girder parts of various promising designs and test them for strength.

A Close Escape

A seaplane piloted by Edmund Kendall of North Reading and carrying Warren Middleton as a passenger stalled owing to engine trouble and plunged into Lake Quannapowitt, Wakefield, on June 8, its nose sticking in the mud at the bottom of the lake.

Kendall and Middleton escaped serious injury by leaping into the lake before the machine struck the water. They were rescued by a row boat.

Australian Air Mail Services

During 1923, Australia's two air mail services functioned with businesslike regularity and no small measure of success, says *Aircraft*, the only Australian aeronautic magazine which has just been resuscitated by its editor and proprietor, Edward J. Hart, after one year's suspended animation.

On the 1195-mi. airway from Geraldton to Derby, in Western Australia, the contractor's machines passed the 200,000th milestone. Approximately 800 passengers were carried, while the monthly mail bag averaged some 12,000 letters. This airway has now been extended south to Perth. By rail the distance is 330 mi., the journey occupying from 17 to 25 hr. By air the mileage is reduced to 270 mi., or about 3 hr. flight. This section of the route was inaugurated on Jan. 15, 1924, and a renewal of the subsidy has been approved by the Australian government for a further term of three years, expiring on Dec. 4, 1926.

On the northern end of this airway an extension of 560 mi., from Derby to Wyndham, will be in operation by September or October, 1924. This will then make the Western Australian airway the longest continuous mail and passenger air line in the world, the length of which will only be exceeded by New York to San Francisco airway of the U. S. Air Mail Service (2680 mi.).

The other Australian airway, operated between Charleville and Cloncurry (585 mi.) by the Queensland & Northern Territory Aerial Services, Ltd., has considering all initial difficulties, established a highly commendable record during its first year, which ended Nov. 1, 1923. Of 208 scheduled flights, 204 were completed. The flying time for the year was 995 hr.; the distance covered, 71,100 mi.; passengers carried, 208; freight and mails, 5674 lb. Since the company's inception its machines have flown 121,000 mi. The entire operations were carried out without a single accident involving injury to passenger or crew. The mail contract has been renewed for further period of one year.

The Adelaide-Sydney-Brisbane air service, contract for which was awarded to the Larkin Aircraft Supply Co. of Melbourne in 1921, has not yet started operations. The delay is due to a great many causes, one of which was the failure of the six-seater Handasyde H2 commercial plane to obtain a certificate of airworthiness from the British air ministry.

Mr. Hart, in announcing the reappearance of his excellent journal, writes as follows:

"Here, in the Antipodes, I have fought an absolutely lone hand in aviation journalism for exactly six years. In real money (my own, by the way) the venture has cost me nearly $20,000, with nothing to show for it but a few old files. During that period I have twice been compelled to suspend publication through lack of working capital. It is only today that *Aircraft* is able to stand on its hind legs."

The publication offices of *Aircraft* have been transferred from Sydney to Melbourne, and all communications should be addressed to Box 1101, G.P.O., Melbourne, Australia.

AVIATION wishes *Aircraft* all success in its fight in behalf of the Air Cause, and hopes that its tribulations will have reached an end.

First Round Australia Flight

The first flight around Australia was recently completed by two Australian airmen, Wing Commander S. J. Goble and Flying Officer L. E. MacIntyre in a Fairey 3D seaplane equipped with a 360 hp. Rolls Royce Eagle engine. The flight was made from Melbourne in anti-clockwise direction, that is, following the coasts of New South Wales, Queensland, the Northern Territory, Western Australia and South Australia, with return to Melbourne. The flight was started April 6, and was completed May 19, the total distance of approximately 8600 mi. being covered in 44 days' elapsed time and in 90 flying hours.

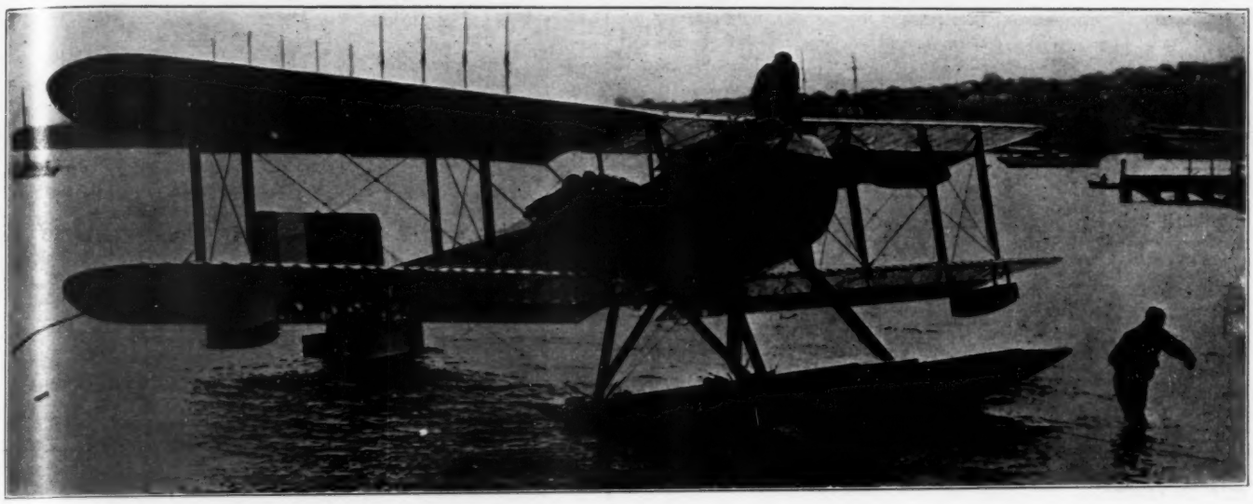


Photo Wide World

The Fairey 3D seaplane in which Commander Goble and Lieutenant MacIntyre successfully flew around Australia in 44 days

Considering that a very large portion of the route lay over great distances of uninhabited and largely unknown territory, and that except for one or two places no preparation had been made for supplies, the performance is a very noteworthy one. The flight was made for the purpose of selecting suitable sites for coast defense air stations.

Notice to Aviators

Notice to Aviators No. 6 (1924), issued by the U. S. Hydrographic Office, contains information on seaplane facilities in the Haitian Republic, Venezuela and the West Indies, and on general flying conditions in the West Indies.

The Notice to Aviators is a monthly publication whose function is to furnish to aviators information which will be of assistance to them in air navigation, and in particular, in the operation of seaplanes. Aviators and others interested in aviation may aid in making this publication effective by forwarding to the U. S. Hydrographic Office, Washington, D. C., any information of use to airmen.

SCADTA has First Serious Accident

Five persons were killed and one seriously injured at Barranquilla, Colombia on June 8 when a Junkers seaplane, belonging to the SCADTA company, flying over the city burst into flames and fell on the roof of a private residence. Two of the killed were German aviators and the others prominent residents of Barranquilla.

The plane went up for the purpose of scattering propaganda literature over the city.

The SCADTA has been operating a mail and passenger service from the Atlantic Coast to the Upper Magdalena River for the last four years and this was its first accident.

UNITED STATES AIR FORCES

U. S. ARMY AIR SERVICE

New York to Nebraska in One Day

A fine long distance flight of approximately 1300 mi. was made June 15 by Maj. William N. Hensley, A.S., commandant of Mitchel Field, Mineola, L. I., and Lieut. M. L. Ellliott, A.S., operations officer of the same field, when they flew in a DH4B to Columbus, Nebr., in about 12½ hr. The ship took off from Mitchel Field at 3:50 a. m. eastern standard time and landed at Columbus at 7:23 p. m. central standard time. Four stops were made en route, and the two airmen alternated at the controls during the flight. The flight was made as a test of the Air Service's equipment.

Major Hensley is one of the few Air Service officers holding both heavier-than-air and lighter-than-air flying ratings. He is an airplane pilot, an airship pilot and a free balloon pilot. He was the representative of the General Staff on the return flight of the British airship R34 from Roosevelt Field, Hempstead, L. I., to England, in July, 1919.

Exhaust Silencers for Aero Engines

Two apparently successful designs of exhaust silencers mounted on aviation engines are now undergoing service tests. Both have been designed and constructed by the Engineering Division, at McCook Field. One of these designs, known as the whirl-chamber type, has been built for use with the Liberty 12 engine.

These silencers are now installed in DH4B P299. They are attached directly to the engine, while long compactly designed pipes lead from the silencers, carrying exhaust gases clear of both cockpits. The overall dimension of the silencers is quite small; in fact, they are the smallest ever constructed for a power output as great as that of the Liberty 12. Approximately 75 hr. have been flown with them, with no burning out of the elements. The extent of the silencing is quite marked, and power loss due to the back pressure is less than 3 per cent at full throttle operation. Speed loss is also negligible. Recent tests made over the speed course at Wilbur Wright Field with this equipment and standard headers showed a loss of 3.1 mi./hr.

The development of this equipment was requested by General Patrick who found the noise of the engine and the vibration harassing to ears and nerves, especially on his many long flights, and a pair of the silencers are now being made for installation on the General's airplane.

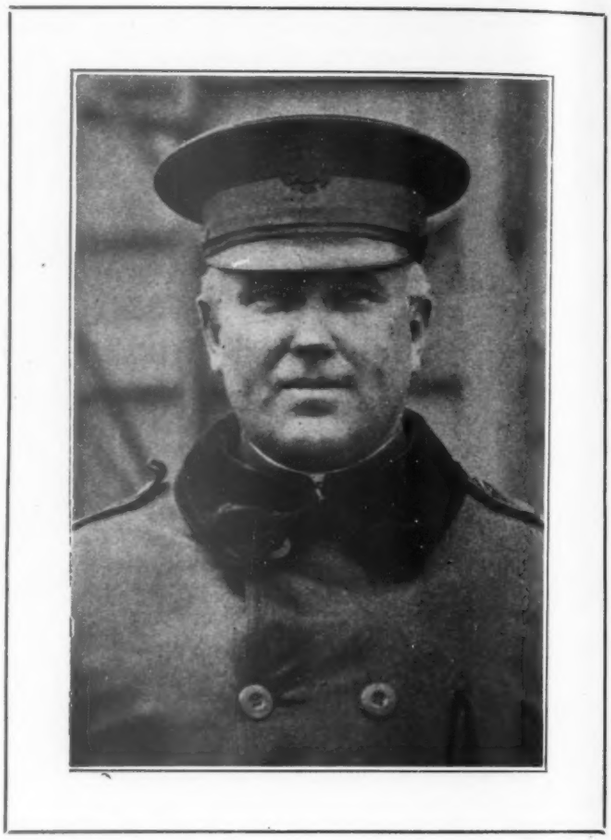
New Oscillagraph

A new apparatus for testing the relative accuracy of different forms of stabilizers for instruments without putting them through the expense of flight tests has been developed recently at McCook Field, Dayton, Ohio. The apparatus duplicates any rolling, pitching, accelerations or oscillations to which the instrument may be subjected in the course of actual flight. The performance is photographed during the oscillagraph test for further accuracy of determination. The amplitude or period of oscillation may be varied for any combination of movements or for all compounded. This apparatus not only saves the expense of flight tests but procures an accuracy impossible to be measured in any flight.

Won't Sell Planes to Cuba

The Cuban Government probably will have to turn elsewhere for the ten military airplanes which President Zayas wishes to purchase from the Army Air Service at $10,000 each, because the latter has none to sell at that price.

According to the New York *World*, the Air Service rather strained a point in selling airplanes to the Mexican Government recently to assist in putting down the De La Huerta revolution.



Maj. William N. Hensley, A.S., commandant of Mitchel Field, Mineola, N. Y.

Army Air Orders

One month ten days' leave to Maj. Jenner Y. Chisum, A.S., from July 1.

Capt. Ira C. Eaker, A.S., Mitchel Field and temporary duty Columbia University, to Office, C.A.S., on completion course of instruction

First Lieut. Carl W. Pyle, A.S., McCook Field, to Wilbur Wright Field, effective June 30.

First Lieut. Clarence H. Welch, A.S., Wharton School of Finance, University of Pennsylvania, on completion course of instruction that institution, and after leave granted, to A.S., Primary Flying School, Brooks Field, for course commencing Sept. 15.

Two months' leave to Maj. Albert L. Sneed, A.S., from June 20.

Capt. William Ludwig Hanson, M.O.R.C., East St. Louis, Ill., to School of Aviation Medicine, Mitchel Field, for course of instruction, by May 12, to rank from Oct. 10, 1923, and to be relieved to reach his home by June 23.

Capt. Charles Hansford Brownlee, M.O.R.C., Austin, Tex., to School of Aviation Medicine, Mitchel Field, for course of instruction, beginning May 12, to rank from that date, and to be relieved to reach his home on June 23.

Capt. Roland Reed Culbertson, M.O.R.C., Maud, Okla., to School of Aviation Medicine, Mitchel Field, for course of instruction, beginning May 12, to rank from that date, and to be relieved in time to reach his home on June 23.

Maj. Robert Coker, A.S., Command and General Staff School, Fort Leavenworth, to Scott Field, on completion present course of instruction and after leave granted.

First Lieut. Rudolph W. Propst, A.S., duty, Army Building, 39 Whithall Street, New York, to Mitchel Field, after leave granted, effective June 30.

Transfer Sec. Lieut. John Albert Chambers, A.S., now on duty with Sec. Eng., Fort Sam Houston, to Corps of Eng., on April 24, ranking from June 12, 1923, announced, to remain on present duties.

Maj. Henry W. Harms, A.S. Tactical School, Langley Field, to duty that station on completion present course about June 15.

Capt. Ralph H. Wooten, A.S., Tactical School, Langley Field, to Office, C.A.S., on completion present course about June 15 and after leave granted.

First Lieut. Paul E. Burrows, A.S., Tactical School, Langley Field, to Middletown A.I.D., on completion present course about June 15 and after leave granted.

U. S. NAVAL AVIATION

Seaplane Turns Submarine

The first subsurface launching of a torpedo from a plane was inadvertently made recently at the Naval Air Station at Pensacola, Fla. In making an approach run with a torpedo, with an R6L torpedo training plane, Lieut. (jg) G. Van Deurs, Student Naval Aviator, misjudged his distance because of the very glassy water and dove into Pensacola Bay about 100 yd. in advance of his launching point. The plane was entirely submerged for an instant, and then popped back to the surface. But when the plane regained the surface it was minus its torpedo.

The pilot of the plane, who was uninjured, and men on several small boats who had come to his assistance searched for the torpedo without success. The pilot of an HS seaplane, flying near the R6L at the time of the crash, had seen the torpedo start on its run while the plane was under water, and followed it to the end of its run, where he attached a line to it and towed it back to the beach. The torpedo made a perfect run of 300 yd. and would have scored a direct hit if the target boat had remained in position. The target boat, by coming to the rescue of the R6L, avoided the torpedo. The plane was a total wreck, but the pilot suffered only a ducking.

Navy Air Orders

Ens. Francis D. A. Ford, det. U.S.S. Langley; to temp. duty under instr. in aviation, Naval Air Sta., Pensacola, Fla.

Lieut. James C. Lough (DC), det. Nav. Air Sta., San Diego, Calif.; to U.S.S. New Mexico.

Lieut. Charles T. Dickeman (CEC), det. Nav. Air Sta., Lakehurst, N. J.; to Navy Yard, Pearl Harbor, T. H.

Lieut. Herman A. Spanagel, det. U.S.S. Arkansas; to Div. Flt. Trng. Nav. operations.

Gunr. Frederick E. McCoy, det. Nav. Air Sta. San Diego, Calif.; to U.S.S. Canopus.

Lieut. Charles J. McReavy, det. U.S.S. New Mexico; to temp. duty Naval Air Sta., Pensacola, Fla.

Lieut. George H. Williams (SC), det. Nav. Air Sta., San Diego, Cal.; to Naval Station, Guam.

Crash of Marine Corps Plane

Sec. Lieut. Harold D. Hail, U. S. Marine Corps, of Crockett, Tex., and Corpl. Ralph W. Lehman, U.S.M.C., of Moyodam, N. C., were both burned to death when a Naval VE7, crashed on June 10 at Garrisonville, Va. Lieutenant Hail was piloting the plane on a practice flight with Corporal Lehman as a passenger when the plane fell. At the time of the report, no explanation of the accident had been determined by the Commander of Brown Field, at Quantico, Va.

Secretary Wilbur Visits Lakehurst

The Secretary of the Navy and Rear Admiral W. A. Moffett, Chief of the Bureau of Aeronautics, Navy Department, visited the Naval Air Station at Lakehurst, N. J., on May 28. The Secretary was shown through the airship Shenandoah and all parts of the station.

Flight Training Class at Pensacola

Seventy-seven officers have been selected for aviation training in the new class which will start during the summer at the Naval Air Station at Pensacola, Fla. This is the largest class of Student Naval Aviators that has ever been selected for flight training since the large classes during the war period.

The selection was made by the Bureau of Navigation Board of Selection for Aviation Training. The Board had before them one hundred applications. Following the policy that officers selected for flight training must have served at sea with the Fleet and be indoctrinated with the habits, customs and profession-qualifications of the Naval service, only those officers who had two or more years of sea duty since graduation from the Academy were selected by the Board. The new class will commence training about Aug. 15.

Advance Base for Aircraft Operations

The advance base maintained by the Aircraft Squadrons Battle Fleet at Wilmington, Calif., for the use of planes operating with the Fleet during gunnery exercises has proved of great value. The planes are serviced at the field after their arrival from the Naval Air Station at San Diego, thus increasing their endurance time and operating range while engaged in work with the vessels at sea. Inspection of planes and minor repairs are carried on at the advance base, thus obviating the necessity of trips to San Diego in cases of minor trouble.

Plane Delivers Newspapers to President

A number of Sunday morning newspapers were delivered to President Coolidge, on board the U.S.S. Mayflower in the lower Potomac, by a plane from the Naval Air Station at Anacostia, D. C., on the morning of June 1. The plane, an H16, landed near the President's yacht and the papers were transferred to a small boat from the Mayflower for transfer to the President. Lieut. Harry Carlson, U.S.N., piloted the plane.

Mooring Mast Nears Completion

The airship mooring mast, being erected at the Naval Air Station at San Diego, Calif., is practically completed. The temporary erection tower has been torn away and the flood lights for night work have been received and placed, although not yet wired. Practically all connections of water and gasoline lines have been made.

CALENDAR OF AERONAUTICAL EVENTS

March 25.	Start of the British World Flight, Southampton, England.
April 6.	Start of World Flight of the U. S. Army Air Service, Seattle.
June 21.	Annual F.A.I. Conference, Paris, France.
June 22.	Commodore Beaumont International Cup Race for high speed airplanes, Istres, France.
July 28.	National Guard Air Meet, Miller Field, New Dorp, S. I., N. Y.
July 5-6.	Zenith International Airplane Efficiency Race, Paris, France.
August.	"Tour de France des Avionnettes." International Round-France race for light airplanes.
Oct. 2-4.	International Air Races, incl. Pulitzer Trophy Race, Dayton, Ohio.
Oct. 24-25.	Schneider Cup Race, Baltimore.
Dec. 17.	Twenty-first anniversary of the first successful airplane flight.

BACKFIRES

This happened at the naval air station of Flat Spins, Fla. A plane went up, came down and crashed. The pilot and a student were rescued from the wreckage without a scratch, but the ship was a total washout.

"One old crate less," casually remarked a visitor to the station. "No, sir," said a C.P.O., "we still can recondition her. The manufacturer's name plate is fortunately intact."

* * * *

When is an airdrome manager a "caretaker"? Ask the *New York Times*.

* * * *

The C.O. of a naval air station recently had a violent brain wave. Carrier pigeons, he said to himself, are all right as far as they go, but they somewhat lack nautical qualities. What if we tried to cross them with seagulls.

So he made out a report in due form and sent it through the proper channels to the Bu. Aer., Wash., D. C.

A week later the Bu. Aer. wrote back complimenting the officer upon his initiative, in keeping with the best traditions of the Navy, but suggested that after the crossing of the species had been successfully accomplished it would be highly desirable to cross the product with African parrots, so the birds would make their reports verbally.

* * * *

That all soldiers of the sea are not Marines is the fact gathered from a recent Army Order referring to a warrant officer who is the mate of a vessel of the Army Mine Planter Service. Very amphibian, what?

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2621	*Clocks 8-day rim wind luminus face	10.50
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2690	Motor meter Boyce 16 ft. tube 2" non-luminus face	10.00
2692	Motor meter Boyce 40 ft. tube 3" luminus face centigrade	10.00
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2644	Tachometer NCR 0 to 2500 RPM luminus dial	10.00
2642	Tachometer Jones 500 to 2500 RPM luminus dial	10.00
2643	Tachometer Johns-Manville 500 to 2500 luminus dial	7.50
2645	Tachometer Jaeger 0 to 1000 RPM luminus dial	5.00
2649	Tachometer Jaeger 0 to 2000 RPM non luminus dial	5.00
2647	Tachometer Jaeger 0 to 2400 RPM luminus dial	7.50
2648	Tachometer Jaeger 0 to 3000 RPM luminus dial	7.50
2667	Shaft and cable to fit above tachometers 28"	2.50
2671	Shaft and cable to fit above tachometers 42"	2.50
2672	*Shaft and cable to fit above tachometers 6 ft.	5.00
2673	*Shaft and cable to fit above tachometers 7½ ft..	6.00
2668	*Shaft and cable to fit above tachometers 9 ft.	7.50
2669	*Shaft and cable to fit above tachometers 10 ft.	8.00
2683	*Adapter to use above shaft on Warner drive, straight	2.50
2681	Adapter to use above shaft on Warner drive, 1 to 2	3.00
2684	*Adapter to use above shaft on Jaeger tachometers	1.50
2630	*Oil gauges 2¾" luminus face 0 to 120 lbs.	4.50
2635	Dixie two magneto switch	4.00
2637	*Berling single magneto switch Aluminum new type	4.00

NOTE: Articles with star (*) are new manufactured stock.

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170	Copper tubing 1/8" 16 ft. lengths per foot	.15
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Publisher's News Letter

One of our friends who was particularly grieved over something that had recently appeared in AVIATION, asked that we be a little less caustic in our point of view on some subjects so that we would not be placed in the class of the "common scold." We are glad that he spoke frankly, for it gives us an opportunity of making a little clearer the editorial policy of AVIATION and more especially the purpose of these News Letters. As was said, when we commenced using this method of communicating with our subscribers, there are many matters that can properly be discussed here that would appear out of place in our editorial or news columns. Certain matters concerning the inside workings of the flying world can conveniently be dealt with on this page without giving the impression of loading our few columns with matters devoid of a wider appeal.

* * * *

One of the essential qualities of editorial policy is the expression of opinion. Praise becomes monotonous when continuous. It is also true that in most things of life it is very easy and also very comfortable to mention only the pleasant subjects. But a paper that does that is not fulfilling its duty to its readers. They want opinions, with facts, on which they can pass judgment. Unfortunately, the more interesting problems which are before the aeronautical community at the present time can hardly be treated without giving rise to criticism of a very pointed kind. Perhaps some of our readers may feel that there has been too much of this kind of comment. If they could only see the volume of critical correspondence that an editorial office receives, they would know that any criticism appearing in AVIATION is probably only a temperate statement of much more violent opinions held by many of our readers.

* * * *

Many friends ask why we do not place more copies of AVIATION on the newstands so that they can purchase the weekly while traveling. We have explained our reasons for this policy before, but a restatement may be advisable at this time. There are tens of thousands of news stands scattered throughout the country. If a publisher wishes to do so, he can print enough copies and have several sent to each stand. This would require the printing of perhaps a hundred thousand copies. The expense of shipping these copies to the stands and the cost of getting them back would have to be paid by the publisher, and he would only receive payment for the copies sold. The average sale for aeronautical magazines put out on this basis is about fifty per cent, so that the publisher who conducts his news stand sales on this plan usually has to stand a very heavy loss. AVIATION does not accept returned copies. Any newsdealer can order as many copies of AVIATION as he has calls for, and secure them from the American News Company without the least trouble. But we cannot afford to send out copies in sufficient quantity to have them on sale at every stand for the benefit of the few who cannot get them regularly through mail subscriptions. So we again urge those of our readers who want to be sure of getting AVIATION regularly to subscribe for it. We shall be glad to change your address as often as you request it.

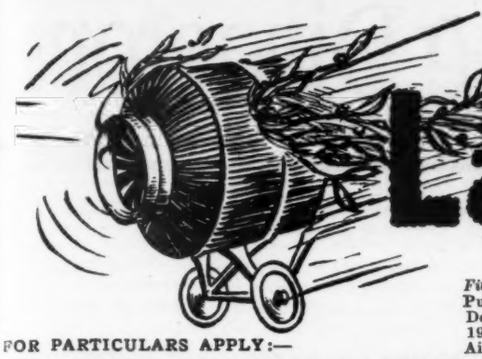
* * * *

A very interesting letter has just been received from Chignik, Alaska, from a friend who has been following the Round the World Fliers on the Coast Guard cutter Algonquin. He writes:

"Since I left Seattle I went to Seward and from there on to Unalaska. I took the cutter Haida to Seward, where we loaded up pontoons for Unalaska. Then, as soon as Martin came down in Portage Bay, we were sent out to him with a motor and spare parts.

"To get out of the winds, Martin had to hide his plane up one of the creeks. Then when he wanted to get out he had to build a huge sled and have the Standard Oil tractor pull him out. When he got into the Bay a 25 mi./ hr. snow storm was blowing in from the south, making a terrific sea on the incoming tide, so that Martin had to fly in the teeth of the storm or run the risk of having his pontoons smashed up by the raging waves of the Bay.

"He elected to fly to Chignik. After being in the air for two and a half hours, he had to climb down into Kijulik Bay. Ice and snow had made it almost impossible for him to move the ailerons, and the snow was so blinding he had to follow the mountainous coast line to keep from going out to sea. These mountains form a veritable wall from two to three thousand feet straight up from the sea, so you see what he had to fly through. It was one of the greatest cases of 'guts' that I have ever seen. Martin is a great fellow. He still has the smile that won't come off. I did not think he would ever be seen again when he left Kanatak."—L.D.G.



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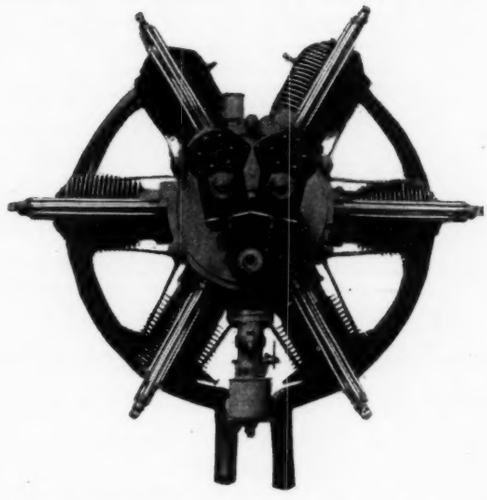

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Dope, Nitrate, freshly compounded, $2.50 gal. Dope, Acetate, excellent grade, $2.50 gal. Spar varnish, highest grade, none better, $5.00 gal. Linen, 75c yd. High grade cotton, 60c yd. Fresh made shock cord, 15c ft. Metric spark plugs, 25c ea. Resistal goggles, $3.00. OX5, overhauled, $125.00. OX5 parts. Spruce, aluminum, steel, plywood.

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New 150 H.P. Hisparo $1050; Slightly used 150 H.P. Hispano $800. New OXX6 Motors $375.; slightly used OXX6 Motors $200; new Liberty Motors; Completely overhauled low compression Packard Liberty Motors $1475.

New HSL and New MF Flying Boats; splendid used MF Boat complete $1475.; used F Boat complete $1175.; Canucks, JN4D and Standard airplanes at Cleveland and various other points.

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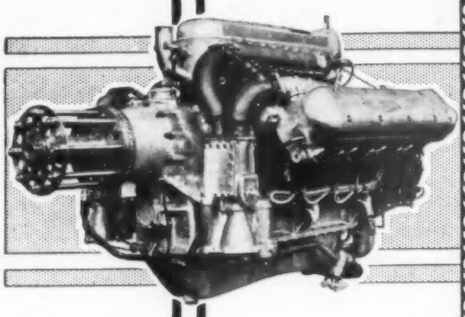

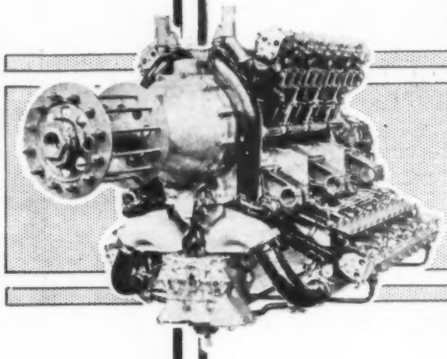

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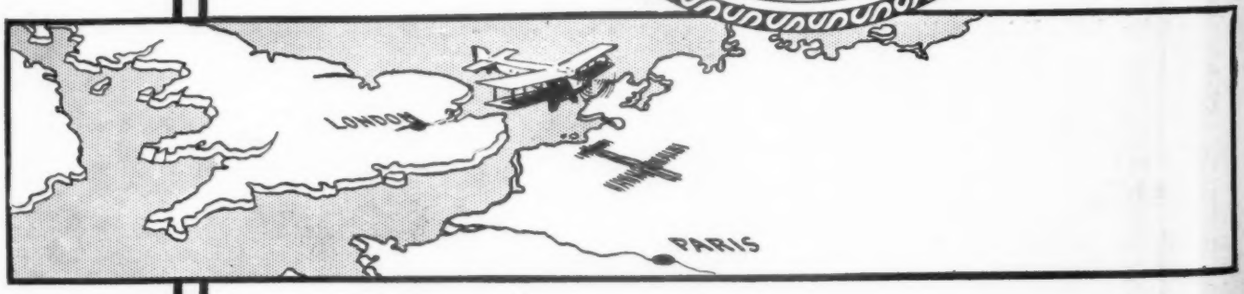
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